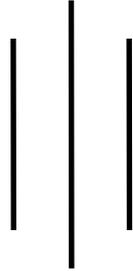
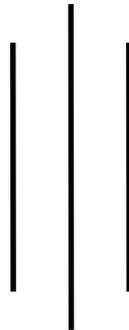


**USE OF NATURAL FOOD ON PREVENTING
BONE MARROW DEPRESSION IN CANCER
PATIENTS WHO ARE UNDER
CHEMOTHERAPY**



**Submitted To:
INSTITUTE OF MEDICINE
DEAN'S OFFICE
TRIBHUVAN UNIVERSITY
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SUMMARY OF THE RESEARCH REPORT ON

USE OF NATURAL FOOD ON PREVENTING BONE MARROW DEPRESSION IN CANCER PATIENTS WHO ARE UNDER CHEMO-THERAPY

Cancer is abnormal multiplication of cells. It is a much dreaded disease. It can occur in any part of the body. Cancer can be cured if it is detected in the early stage and treated early. The complete treatment is needed. In modern medicine, treatment of cancer can be surgery along with chemo-therapy and radiation or only chemo-therapy. Chemo therapy is the treatment of cancer by drugs. It prevents the spread of cancer to other organs. It can also be given orally but intravenous injection is the most common method. The course of chemo-therapy is given in cycles. Usually, one patient gets six cycles of drugs. There are gaps of a few days in one cycle and three weeks in between cycles.

Usually two or three drugs are given in combination. Antivomiting and antiallergic drugs are also combined to prevent as well as reduce some of the side effects.

Drugs kill normal as well as diseased cells. However, normal cells are formed afterwards. The side effects of the drugs vary depending upon the type and dose of the drugs. The side effects include nausea, vomiting, indigestion, diarrhoea, weakness, hotness in head, hand, foot and whole body, itching in the genital and urinary region, burning in stool and urine, loss of body hair usually of head, beards and moustaches, black spots in nails, puffiness on face and irregularities in menses. Some patients experience less side effects and some more. These side effects are due to adverse effect of drugs in bone marrow, heart, liver, kidney and other organs.

Blood count should be done before each dose of chemo-therapy. If the white blood count is below 4000, the treatment should be postponed until the white blood count becomes 4000.

Of course, there are drugs like Neuposian that increase blood counts but it costs NcRs 7000 to 8000 and a patient may need to take more than one dose. One dose increase about 1000 WBC. Blood transfusion also raises blood count. But these are costly, need intravenous route, can cause inflammation of veins, infection etc..

The possible effect on cancer by green vegetables and fresh fruits has been related to the specific nutrients contained in them, particularly vitamin A and C, beta carotene, vitamin E and selenium. These foods also prevent human beings and animals against cancer of oral cavity, oesophagus, stomach and intestines. In contrary to naturopath, a doctor of modern medicine may advise a patients under chemo-therapy not to eat raw food, salad or fruits. But the natural food is of low cost, full of vitamins, enzymes and minerals. It fulfils belly, gives energy and satisfaction to individuals under therapy. It also helps in treating and preventing other illness.

The investigator of this study has met many cancer patients who are in miserable condition due to these effects. She also interviewed many patients who have discontinued treatment due to these side effects and was in search of something that could prevent the side effect and help to continue the treatment.

OBJECTIVES:

The main objective of the study was to prevent bone marrow depression in patients who are getting chemo-therapy.

SPECIFIC OBJECTIVES:

- to compare the blood count specially white blood cells, platelets and haemoglobin of the cancer patient who are getting chemotherapy before and after using natural foods.
- to counsel cancer patients who are getting chemotherapy regarding, natural foods, wheat grass juice and ways of healthy living.

DEFINITION OF TERM:

Natural Food: In this study natural food was meant by wheat grass extract, and extracts of other raw vegetables and fruits.

RESEARCH HYPOTHESIS:

The Research Hypothesis was as Follows:

The blood count of patients taking extract of Natural food (Experiment group) will be significantly higher than patient not taking the extract (control).

REVIEW OF LITERATURE

From the time of Hipocrates, it has been known that certain foods have disease preventing and disease healing benefits. This knowledge has remained history's secrets for most people. There has been growing body of documented medical evidence that diet both causes and cures diseases. Nutritional awareness and practice remains far from a twentieth century world ideal.

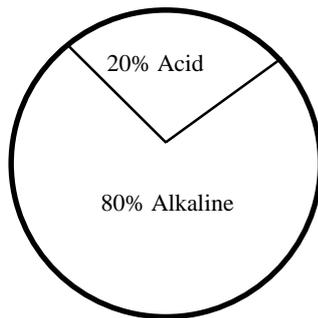
Jensen mentions a survey of 12,000 Americans by the National Cancer Institute (NCI) that revealed a majority continued to practice poor eating habits. Asked by NCI what they had eaten in the last 24 hours, more than 40% of the respondents said they had not even one piece of fruit, and about 20% said they had not eaten even one vegetable. Some 55% of the NCI survey group said they had eaten red meat, and more than 40% had at least one serving of luncheon meat or becon that day. Results like this lead us to believe that the message of good nutrition is not getting out there despite strong evidence that diet can reverse the course of some forms of cancer, heart disease, diabetes and to name a few. Proper nutrition changes the course of disease at its sources i.e. tissue structures. No therapy or drug known to modern medical science can rebuild tissue that has been damaged by disease or trauma. Food alone can accomplish this feat. It is for that reason that nutrition is an indispensable weapon against disease.

Proper food enriches life and well being. Most people are living at only 50% of their full health potential not really sick, but not truly well either. These people need to understand that the same foods that heal by rebuilding damaged tissue will enhance wellness by increasing the efficiency and energy level of under endocrine glands, and all other organs, tissues - including the skin, the muscles, the nerves, the joints, the vein, and the arteries one can feel wonderful if one will simply eat healthful foods and avoid harmful foods.

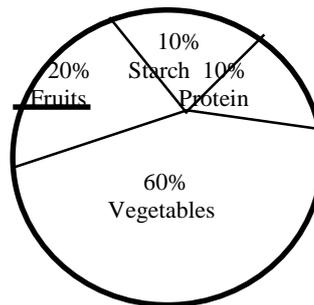
The amount of food taken have as much of an effect on health as the number of meals are taken. Some persons get long best with one meal a day, other requires two. One common mistake is food in to eat too much, too frequently, taking the next meal before the previous one has been assimilated. This overworks the digestive organs. Others space meals too far apart, depleting their energy stores, and bringing about fatigue before taking the next meal. This, too, places a strain upon the body and the health.

For optimum health, a body should be slightly alkaline. If the body becomes too acidic or too alkaline, illness and disease will result. When we speak of an acid body, we need to understand the pH, or relative acidity alkalinity, in the standard terminology of chemistry . The pH scale is from 1 to 14, with 7 representing neutrality, neither acid or alkaline. Most living things require an acid - alkaline environment of between pH 5.5. and 8 to survive. Outside this range, they become sick and die. The optimum pH range for human tissue is about 7.35 to 7.45 which is very close to neutral, slightly favouring the alkaline side. This is the normal pH for human body therefore we must have six part vegetables, two parts fruit. This will make up the 80 percent of the alkaline forming food required, and one food starch and one protein the 20% acid food required.

Acid Alkaline Proportions



Food Proportions



Bernard gives cases of cancer breast cured by grape juice for 30 days, cancer of prostate by pumpkin seed diet and beet juice.

Dewan 1999 Writes.

“...When food does not provide live atoms to the body cells, they become starved and unable to function properly. They became disorganised and start floating around. With an all round deficiency of live atoms from live food, there are places in the body where protective resistance is low. Those floating starved unfunctional cells group together at those weak location and manifest themselves as tumours, ulcers or cancer. ... The simple cure providing a live automatically vibrant food ...fruits and raw vegetables.”

Mindell 1994 says

“...Indoles, found in cruciferous vegetables (cabbage, broccoli, Brussels sprouts), may help to prevent breast cancer by blocking the action of potent oestrogens that trigger the growth of tumours today, onion is high up on the list of foods

being investigated by the US National Cancer Institute for its potential cancer fighting properties. People who ate the highest amounts of allium vegetables had lowest rates of stomach cancer. It has more than 100 type of sulphur containing compounds it is also rich in flavonoids, including quercetin, which has been widely studied because it has been shown to deactivate several potent carcinogens and tumour promoters...”

Mendell mentions

“Alpha-linolenic acid, which is abundant in flaxseed, is one of the omega - 3 polyunsaturated fatty acids, similar to those found in fatty fish such as salmon and mackerel. Alpha - linolenic acid has been shown to inhibit the metabolism of another fatty acid, arachidonic, which is believed to accelerate the pace at which certain types of cancer cells multiply... the cellular damage caused by free radicals is believed to be responsible for initiating many forms of cancer and premature ageing. Antioxidants can prevent the formation of free radicals or, if formed, can help stop these bad oxygen molecules in their tracks preventing them from binding with other molecules.”

Major antioxidants include vitamin c and e, carotenoids such as beta carotene and lycopene selenium, zinc, manganese and coenzyme glutathione, an amino acid.

Mendell gives the importance of beta carotene and in some cases, vitamin A as a potent weapons against cancer...

“Studies show that consumption of green and yellow leafy vegetables was associated with lower levels of stomach cancer.. consumption of fruits and vegetables has been associated with decreased risk of cancers of the colon and rectum... lower levels of beta carotene with an increased risk of bladder cancer... women with breast cancer had lower concentrations of plasma beta carotene than those free of disease. Lowest ingestion of beta carotene had the highest risk of developing breast cancer after other factors were weighed, including family history, age of first pregnancy etc...”

Sources of Natural Foods for Cancer Prevention

1. Citrus fruits like lemons, limes, oranges, grapes and ruby red grapes fruits, cherries, strawberries, apples, cucumber, orange fruits, yellow squash, papaya, mangoes, peaches, apricots, pine, apples, plantain, nuts like walnuts, almonds, avocados.
2. Vegetables; orange, yellow, greens, tomatoes (golbheda), pumpkin(farsi), carrots (gajar), parsley, cabbage(banda), broccouli, cauliflower, turnip, celery, green, yellow or red onions(pyaj), garlic(lasun), liquorice, dark green leafy vegetables, green mustard, mushrooms, lettuce, spinach, coriander green, asparagus, kohlrabi, green peppers, sweet potatoes, wheat grass.
3. Herbs like rosemary, basil (Tulasi), mint(pudina), green teas(hariyo chiya).

4. Whole grains, flex, oats, peanuts, sunflower seeds (suryamukhi), wheat grass.
5. Legumes kidney beans (simi), chick peas, soyabeans(bhatmas).
6. Citrus oil, vegetables oils.
7. Fish, cooked egg, yolk, liver, raw meat, milk butter.

These food contain following Vitamins:

Vitamin A, B, B12, C, E, K,	Carotenoids
Betacarotenoids	Lycopene
Selenium	Lutein
Catechins	Caumarins
Cruciferous Indoles	Ellagic acid
Glutathione	Isoflavines
Lignans	Limonene
Monoterpenes	Omaga 3, fattyacids
Pectin	Phenolic acid
Phytetes	Protese inhibitors
Psoralens	Quiones
Retenoids	Sulphides
Folic acids	

Effect:

- Treats certain kinds of cancer
- Reduces growth of precancerous and cancerous cells.
- Protects against certain kinds of cancer
- Deactivates oestrogen
- Prevents oxidation
- Counteracts carcinogens
- Deactivates steroidal hormones.
- Prevents the conversion of normal cell to cancer cell.
- Helps immune system battle against unwanted invaders.

METHODOLOGY:

This was a two group pre-test post test control group design experimental study. The experimental group was counselled, instructions and advice was given about the extract of natural food. Wheat grass was provided to them. They were instructed to grow wheat grass at home. The control group was given nothing. Report of Blood test of both group was noted before they took Chemo-therapy and was compared when they came to take another dose of chemotherapy.

The study area were Teaching Hospital, Bir Hospital and Kanti Children Hospital. Population were all cancer patient getting chemo-therapy from the respective health institutions.

Sample size was 64 persons.

Sampling Method:

It was a convenient sampling. However, effort was made to match the stage of cancer, general condition of the patient and the doses of chemo-therapy.

Tool:

A format was designed with patients introduction (name, age, address, sex), type of cancer, stage of cancer, type of chemo-therapy and doses, blood count report and condition of patient.

Intervention:

A written instructions was given to patient of experimental group with full explanation.

Result:

Two tailed paired T test revealed the following:

1. Although there was more rise in the haemoglobin level and platelets counts of experimental group than control, the rise was not statistically significant.
2. Although there was rise in white blood count of experimental group and falling the white blood count of the controls it was not statistically significant. But the patient of experimental group felt less weak, less nauseated and less vomiting then the patient of the control group.

Therefore the null hypothesis “ there is no significant difference between subject who take natural food during chemotherapy and who do not” is accepted.

In experimental group four patients experienced less vomiting and 20 patients didnot vomit and all felt less weakness after following the instructions of natural food than they felt following the prior chemotherapy when they had not learned about natural food.

Discussions:

The finding of the study showed that although there was more rise in the haemoglobin, white bolld cell count and platelets counts of experimental group than control after intervention program the rise was not statistically significant. The result might have affected by the following reasons.

1. There was no control in the confounding variables of the respondents such as:
 - previous knowledge of natural food
 - likes and dislikes towards natural food
 - economic status to afford natural food,
 - attitude and belief towards natural food
 - instructions towards food by their doctors.
2. There was no control on the side effects felt by the respondents like nausea vomiting, diarrhoea after chemotherapy which might have prevented then taking natural food with a fear of getting these symptoms.
3. Some patient were not liking the taste of raw food, wheat extracts, sprouted food and might not have followed the instruction exactly.
4. Giving natural food also depends by the care takers attitude, belief and knowledge regarding food. Care takes were not involved during counselling of the patient.

5. The controls were never interviewed regarding their intake of natural food.
6. The experimental group were not supervised or followed up to ensure that they took natural food in their diet regularly in sufficient amount.
7. Since the schedule of chemotherapy was different in different individual, the experiment days was not same for everybody.
8. Interval for taking the blood count was also not uniform.
9. Since all type of cancer patient were included in the study, blood values varied too much in leukaemia (blood cancer) and other cancer.

Delimitations of the Study.

1. The sample size became small at the end of the study.
2. Study time was very short. There was a lot of tension and hurry to complete the study. Because the research unit allocated only one month period. This prevented the replacement of experimental and control subject according to the plan (the matching of the group by age, sex, stage, cycle of chemotherapy and type of cancer.)
3. Some patient went to another hospital in country outside the country during study period and some discontinued treatments.
4. Time of testing blood differed in patient according to their chemotherapy schedule they did not like to go under investigation for the sake of study.

Implementations

Since this research had many limitations and delimitations, the natural food can be used to provide energy to the patients.

Recommendations

On the basis of the findings of this study it is recommended that:

1. Similar study can be conducted with a large sample of patient.
2. Similar study can be conducted with hospitalised patient where confounding variables can be controlled.
3. A study could be done on patient whom no other treatment like chemotherapy, radiation or surgery can be performed for a long time.
4. Comparative study could be done with patients suffering from different kind of cancer.
5. A qualitative study could be conducted on experience of cancer patients taking natural food
6. Similar study could be done following the patient for longer period, may be for 3-6 months.

CHAPTER - I

Use of Natural Food on Preventing Bone Marrow Depression in Cancer Patients Who are Under Chemotherapy

INTRODUCTION:

When one knows that he/she has cancer, he/she goes into a state of anxiety, grief, panic, fear and so on. It comes as a shock, like punishment. The suffering individual and the family tries all means to fight against this disease.

There are about 100 kinds of cancer which attack human beings. It is a disease in which cells multiply uncontrollably, destroy healthy tissue and harm life. It has been a leading cause of death in many countries including Nepal. It can attack any part of the body, however, the parts most affected are the skin, the lungs, the digestive organs and the female breasts.

Cancer in Greek means crab. The word was first used by Hypocrates. Tumors in Egyptian mummies dating back 5,000 years represent the first known human cancer. Cancer cases are increasing all over the world day by day. In the US about 8,00,000 new cases are diagnosed annually and there are over 8,00,000 deaths due to cancer every year. Cancer is a leading killer in the western world. It is a disease which is difficult to control.

Two third cases of cancer in India and Nepal is tobacco related. Tobacco in our country is as addiction. Tobacco leaves are flavoured with saffron. The rich and the poor take it mixed with lime. This tobacco is instantly prepared by crushing it by the thumb on one's palm. It is pressed between the gum and the cheek and gradually dissolves in the saliva and is absorbed through the mucosa. It is also taken as snuff and sometimes used as tooth powder. Betel nuts added to a variety of tobacco and lime are widely used in Nepalese and in Indian society. Lime and betel nuts increase the risk. Cigarette is to be the number one carcinogenic in the world. Poor people can not afford expensive cigarettes. They smoke bidis, hukka or chillum. They chew tobacco many times a day and share with others as a gesture of friendship. When used for 10-15 years continuously, tobacco brings the lung cancer. It could also be a cancer of the gum, cheek, tongue or any other part of buccal cavity, Larynx, oesophagus, bladder, pancreas and kidney. The great impact of cigarette smoke is lung cancer in smokers who smoke 2 or more packets per day. Chances are more than 20 times among non smokers.

Alcoholic beverages multiply the effect of tobacco smoking on cancer of mouth, pharynx, oesophagus and larynx. Heavy drinkers are more prone to cancer of the liver. Nutritional deficiency associated with heavy drinking is the suspected cause of cancer. As lung cancer is common among the males so is the breast cancer among the females. Breast cancer is the second most common form of cancer in Nepalese women after that of cervix. Late marriage, bearing less children, or no children is the high risk for breast cancer.

Poor vaginal hygiene and excessive sexual act is the risk for cervical cancer, Long hours in the hot sun, may give melanoma, a form of skin cancer, Carcinogens we are exposed to every day are asbestos dust, dust in the plastic factory, rubber and leather factories, nuclear waste, lead filled exhaust fumes of motor vehicles, nitrates, drained into the drinking water from fertilised fields, drugs, food colourings, reagents used in the industry etc. Repeated exposure to x-ray, exposure to atomic blasts, working in an atomic power station, medical use of radiation in cancer treatment, exposure to the radium dial of the watch, uranium and radium paints could be dangerous. In modern times, items like potatoes, onions and milk are exposed to radiation to increase their storage capacity. During treatment of contaminants of drinking

water (chlorination), several halogenated organic compounds are produced which are carcinogenic. High level of these compounds in drinking water has shown co-relation with the rates of cancer in bladder, colon and rectum. Synthetic oestrogen taken during pregnancy produces adenocarcinoma of the vagina and cervix. Estrogen used for menopausal reason can cause the cancer of the uterus. The oral contraceptive has been known to cause cancer of liver, uterus or breast. Even certain drugs used to treat cancer can cause cancer. Immune suppressant drugs given to patient with kidney transplant can cause cancer of liver, gallbladder, lungs, skin or lymphoma. The high dietary fat increases ones risk of colonic cancer.

Dietary fat, high caloric non- vegetarian diet, refined foods can give rise to the cancer of uterus, rectum, large intestine and stomach. A low intake of vitamin A, carotene and selenium may cause lung cancer. The risk of cancer of the stomach is more in a diet deficient in fruits and vegetables containing vitamin C. Excess use of coffee increases the chance of cancer of the pancreas and urinary bladder. Food grains, not well dried, when stored in humid condition, a fungus, aspergillus flavour may grow on them and form a toxin, aflatoxin which may cause cancer. The artificial sweetener like saccharine and cyclamate are weak carcinogens of urinary bladder. Cooking practices like frying, browning and roasting may release hydrocarbons which are carcinogenic. Negative attitudes like sudden fear, recurrent grief, emotional disturbance, hopelessness affects our immune system and can cause cancer.

In the beginning cancer shows no signs. But symptoms may appear before the disease spreads; such as change in bowel or bladder habits; a sore that does not heal, unusual bleeding or discharge; lump in breast or elsewhere; difficulty in swallowing, obvious change in wart or mole, nagging cough or hoarseness. A person who has any of these symptoms longer than two weeks should consult a physician promptly. Cancer treatment is normally done through surgery; radiation therapy and drug therapy (chemotherapy). People who never develop cancer have an immune system that reacts strongly to cancer antigens. Large doses of vitamin A,C and E have proved to be useful in preventing some cancers in laboratory animals. Some foods contain substances that can prevent cancers, like broccoli, cauliflower, cabbage, spinach, carrots, whole grain breads, cereal and some sea foods.

Chemotherapy is the treatment of cancer by drugs. It prevents the spread of cancer to other organs. It can be given orally also. But intravenous injection is the most common method. The course of chemo-therapy is usually, six cycles of drugs. There are gaps of a few days in one cycle and three weeks in between cycles.

Usually two or three drugs are given in combination. Antivomiting and antiallergic drugs are also combined to prevent as well as reduce some of the side effects.

Drugs kill normal as well as diseased cells. However, normal cells are formed afterwards. The side effects of the drugs vary depending upon the type and dose of the drugs. The side effects include nausea, vomiting, indigestion, diarrhoea, weakness, hotness in head, hand, foot and whole body, itching in the genital and urinary region, burning in stool and urine, loss of body hair usually of head, beards and mustaches, black spots in nails, puffiness on face and irregularities in menses. Some patients experience less side effects and some more. These side effects are due to adverse effect of drugs in bone marrow, heart, liver, kidney and other organs.

Blood count should be done before each dose of chemo-therapy. If the white blood count (WBC) is below 4000, the treatment should be postponed until the white blood count becomes 4000.

Of course, there are drugs like Neuphagin that increase blood counts but it costs NcRs 7,000 to 8,000 and a patient may need to take more than one dose. One dose increases about 1000

WBC. Blood transfusion also raises blood count. But these are costly, need intravenous route, can cause inflammation and infection of veins etc..

Thus, in trying to escape diseases, man becomes a victim of drugs and medicines. He can save himself if only he knows the fact that right food has exceptionally healing properties. Hippocrates the Greek physician who is regarded as the Father of Medicine had very rightly said “ Let thy food be thy medicine”. Natural food can be gainfully employed to prevent as well as cure disease. Fruit juices are the best form of natural food. This is because they contain a large number of nourishing and disease fighting nutrients like vitamins, minerals and enzymes. The possible effect on cancer by green vegetables especially wheat grass juice and fresh fruits has been related to the specific nutrients contained in them, particularly vitamin A and C, beta carotene, vitamin E and selenium. These foods also prevent human beings and animals against cancer of oral cavity, oesophagus, stomach and intestines. In contrary to naturopath, a doctor of modern medicine may advise a patients under chemotherapy not to eat raw food, salad or fruits. But the natural food is of low cost, full of vitamins, enzymes and minerals. It fulfils belly, gives energy and satisfaction to individuals under therapy. It also helps in treating and preventing other illness.

Need of the Study:

The investigator of this study has met many cancer patients who are in miserable condition due to these side effects. She also interviewed many patients who have discontinued treatment due to these side effects and was in search of something that could prevent the side effect and help to continue the treatment.

Statement of the Problem:

A patient with cancer is in panic state of mind, emotion and body. He performs all sorts of treatment and rituals in order to get rid of this disease. Chemotherapy are of the mostly used treatment methods. It adds the suffering of the clients due to its side effects. The natural food helps to maintain the health of the patient as it contains lots of vitamins, minerals, enzymes, chlorophyll in it. Therefore the statement of problem “the effect is to see of natural food in preventing bone marrow depression among cancer patient who are taking chemotherapy as measured by the blood value of Haemoglobin White Blood Cell and platelets”.

OBJECTIVES:

The main objective of the study is to prevent bone marrow depression in patients who are getting chemo-therapy.

Specific Objectives are:

- to compare the blood count specially white blood cells, platelets and haemoglobin of the cancer patient who are getting chemotherapy before and after using natural foods.
- to counsel cancer patients who are getting chemotherapy regarding, natural foods, wheat grass juice and ways of healthy living.

RESEARCH HYPOTHESIS:

The research hypothesis is as follows:

The blood count of patients taking extract of Natural food experimental group will be significantly higher than patient not taking the extract (control).

Operational Definitions of the Terms:

Natural Food:

Natural food in this study means all the food items that can be eaten in raw form especially wheat grass juice, fruits, and fruit juice, vegetables and vegetable juices.

Cancer Patient:

Cancer patient in this study means all kinds of cancers who are getting chemotherapy treatment.

Assumptions:

Cancer is a life threatening disease. Chemotherapy cures and controls cancer but some patient can not tolerate it and die due to its toxicity. Side effects of chemotherapy can be reduced and tolerated if the immunity of the patient can be sustained. Natural foods are best means to sustain immunity. Body has healing power. The body's healing power is enhanced by natural food.

Limitations of the Study:

The Study had the Following Limitations:

1. The study was confined to convenient sampling which limits the generalisation of the study.
2. The study was confined to patient who come to get chemotherapy doses in hospital and go back home. They come again to hospital for the next cycle of treatment. Therefore, there was no control on home environment and working environment of clients.
3. Counselling was done for the type, preparation and doses of natural food but there was no control on the method of preparation and follow-up of instruction.
4. As the clients were living at home with their family, there was no control on the family pressure and social pressure put on the client under study.
5. The investigator had no control over the selection of subject.

Conceptual Framework of the Study:

The teaching learning experiences often begins when an individual learns to identify his or her need for gaining insight to do something for meeting his needs. The process of teaching learning brings change in behaviour of the learner in terms of knowledge, attitude and practice. The information which is meaningful and realistic is learned faster and remembered longer than the information which is not need based and not oriented to life experiences. The meaningful experiences is repeated again and again. Repetition of healthy behaviour improves the status of health.

Clients getting chemotherapy have bad experience of the side effects. If he/she takes natural food, will develop positive health and is liable to continue it to improve the health.

Sources of Natural Foods for Cancer Prevention

1. Citrus fruits like lemons, limes, oranges, grapes and ruby red grapes fruits, cherries, strawberries, apples, cucumber, orange fruits, yellow squash, papaya, mangoes, peaches, apricots, pine, apples, plantain, nuts like walnuts, almonds, avocados.
2. Vegetables; orange, yellow, greens, tomatoes (golbheda), pumpkin(farsi), carrots (gajar), parsley, cabbage(banda), broccouli, cauli flowers, turnip, celery, green, yellow or red onions(pyaj), garlic(lasun), liquorice, dark green leafy vegetables, green mustard, mushroomms, lettuce, spinach, corriander green, asparagus, kohlrabi, green peppers, sweet potatoes, wheat grass.
3. Herbs like rosemary, basil (Tulasi), mint(pudina), green teas(hariyo chiya).
4. Whole grains, flex, oats, peanuts, sunflower seeds (suryamukhi), wheat grass.
5. Legumes kidney beans (simi), chick peas, soyabeans(bhatmas).
6. Citrus oil, vegetables oils.
7. Fish, cooked egg, yolk, liver, raw meat, milk butter.

These food contain following Vitamins:

Vitamin A, B, B12, C, E, K,	Carotenoids
Betacarotenoids	Lycopene
Selenium	Lutein
Catechins	Caumarins
Cruciferous Indoles	Ellagic acid
Glutathione	Isoflavines
Lignans	Limonene
Monoterpenes	Omaga 3, fattyacids
Pectin	Phenolic acid
Phytetes	Protese inhibitors
Psoralens	Quiones
Retenoids	Sulphides
Folic acids	

Effect:

- Treats certain kinds of cancer
- Reduces growth of precancerous and cancerous cells.
- Protects against certain kinds of cancer
- Deactivates oestrogen
- Prevents oxidation
- Counteracts carcinogens
- Deactivates steroidal hormones.
- Prevents the conversion of normal cell to cancer cell.
- Helps immune system battle against unwanted invaders.

Presentation of the Study:

This chapter has dealt with the introduction of the study, statement of the problem, objectives of the study, hypothesis, operational definition of the terms, assumption, limitation and conceptual framework of the study. The 2nd chapter presents the review of related literature, 3rd chapter provides information about the methodology adopted, 4th chapter deals with the analysis and 5th chapter consists of discussions, delimitations and recommendations of the study. The study ends with a selected bibliography and annexes.

CHAPTER - II

REVIEW OF LITERATURE

This chapter deals with the selected literature, research as well as non research which were relevant to the study.

From the time of Hipocrates, it has been known that certain foods have disease preventing and disease healing benefits. This knowledge has remained history's secrets for most people. There has been growing body of documented medical evidence that diet both causes and cures diseases. Nutritional awareness and practice remains far from a twentieth century world ideal.

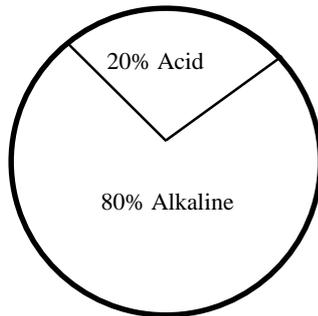
Jensen mentions a survey of 12,000 Americans by the National Cancer Institute (NCI) that revealed a majority continued to practice poor eating habits. Asked by NCI what they had eaten in the last 24 hours, more than 40% of the respondents said they had not even one piece of fruit, and about 20% said they had not eaten even one vegetable. Some 55% of the NCI survey group said they had eaten red meat, and more than 40% had at least one serving of luncheon meat or becon that day. Results like this lead us to believe that the message of good nutrition is not getting out there despite strong evidence that diet can reverse the course of some forms of cancer, heart disease, diabetes and to name a few. Proper nutrition changes the course of disease at its sources i.e. tissue structures. No therapy or drug known to modern medical science can rebuild tissue that has been damaged by disease or trauma. Food alone can accomplish this feat. It is for that reason that nutrition is an indispensable weapon against disease.

Proper food enriches life and well being. Most people are living at only 50% of their full health potential not really sick, but not truly well either. These people need to understand that the same foods that heal by rebuilding damaged tissue will enhance wellness by increasing the efficiency and energy level of under endocrine glands, and all other organs, tissues - including the skin, the muscles, the nerves, the joints, the vein, and the arteries one can feel wonderful if one will simply eat healthful foods and avoid harmful foods.

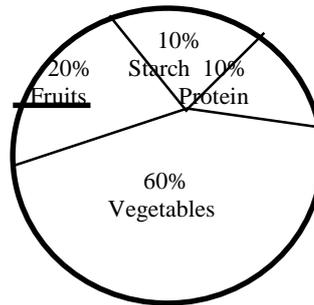
The amount of food taken have as much of an effect on health as the number of meals are taken. Some persons get long best with one meal a day, other requires two. One common mistake is food in to eat too much, too frequently, taking the next meal before the previous one has been assimilated. This overworks the digestive organs. Others space meals too far apart, depleting their energy stores, and bringing about fatigue before taking the next meal. This, too, places a strain upon the body and the health.

For optimum health, a body should be slightly alkaline. If the body becomes too acidic or too alkaline, illness and disease will result. When we speak of an acid body, we need to understand the pH, or relative acidity alkalinity, in the standard terminology of chemistry . The pH scale is from 1 to 14, with 7 representing neutrality, neither acid or alkaline. Most living things require an acid - alkaline environment of between pH 5.5. and 8 to survive. Outside this range, they become sick and die. The optimum pH range for human tissue is about 7.35 to 7.45 which is very close to neutral, slightly favouring the alkaline side. This is the normal pH for human body therefore we must have six part vegetables, two parts fruit. This will make up the 80 percent of the alkaline forming food required, and one food starch and one protein the 20% acid food required.

Acid Alkaline Proportious



Food Proportious



Bernard gives cases of cancer breast cured by grape juice for 30 days, cancer of prostate by pumpkin seed diet and beet juice.

Dewan 1999 Writes.

“...When food does not provide live atoms to the body cells, they become starved and unable to function properly. They became disorganised and start floating around. With an all round deficiency of live atoms from live food, there are places in the body where protective resistance is low. Those floating starved unfunctional cells group together at those weak location and manifest themselves as tumours, ulcers or cancer. ... The simple cure providing a live automatically vibrant food ...fruits and raw vegetables.”

Dewan makes following recommendations for treatment of cancers.

- Drinking fresh juice of wheat grass. Raw green or yellow vegetables, especially lettuce. Especially in leukemia
- Remaining on exclusive grass diet
- Eating 2-3 almonds daily
- Taking fresh apricots and fresh asparagus and figs
- Consuming milk and consuming molasses.
- Eating tomatoes, mushrooms, turnips and cabbage.

Cancer patient should take vitamin A, beta carotene 12500 IU, Vitamin C 2000 mg, vitamin E 400 IU, calcium 250 mg in addition to the above food stuff.

Fresh **Apricot** contains high beta carotene, asparagus has high vitamin c, carotene and selenium **cabbage** contain a chemical called indoles that block cancer formation. **Fig** contains a chemical named benzaldehyde and derivatives of benzaldehyde has cured cancer. **Tomatoes** contains the vitamin and a special kind of carotene. **Shiitake mushrooms** have an element lentinan which fortifies the cells against cancer. Anti cancer drug is produced from shiitake mushrooms. **Turnip** contains glucose molaes which is a cancer fighting compound.

Dewan also mentions a study of Potter from university of Minnesota (December 1998) which was printed on journal of Nutrition “ the unfolding relationship between diet and colon rectal cancer is to eat more vegetables”. He also identified its values in prevention of cancer in high risk group. Another example quoted by Dewan is the study of B.S. Reddy of Valhalla, USA who says “deficiency of vitamins A, C and selenium are associated with any risk of cancer”. He also cites, example of Linus Pauling who pioneered the use of mega doses of vitamin C for cancer around 30,000 to 40,000 mg a day. Vitamin C boosts the immune system,

stimulates production of elements to deal with virus infections, and reduces the ability of cancer cells to spread.

Mindell 1994 says

“...Indoles, found in cruciferous vegetables (cabbage, broccoli, Brussels sprouts), may help to prevent breast cancer by blocking the action of potent oestrogens that trigger the growth of tumours today, onion is high up on the list of foods being investigated by the US National Cancer Institute for its potential cancer fighting properties. People who ate the highest amounts of allium vegetables had lowest rates of stomach cancer. It has more than 100 type of sulphur containing compounds it is also rich in flavonoids, including quercetin, which has been widely studied because it has been shown to deactivate several potent carcinogens and tumour promoters...”

Mendell mentions

“Alpha-linolenic acid, which is abundant in flaxseed, is one of the omega - 3 polyunsaturated fatty acids, similar to those found in fatty fish such as salmon and mackerel. Alpha - linolenic acid has been shown to inhibit the metabolism of another fatty acid, enoleic, which is believed to accelerate the pace at which certain types of cancer cells multiply... the cellular damage caused by free radicals is believed to be responsible for initiating many forms of cancer and premature ageing. Antioxidants can prevent the formation of free radicals or, if formed, can help stop these bad oxygen molecules in their tracks preventing them from binding with other molecules.”

Major antioxidants include vitamin c and e, carotenoids such as beta carotene and lycopene selenium, zinc, manganese and coenzyme glutathione, an aminoacid.

Mindell gives the importance of beta carotene and in some cases, vitamin A as a potent weapons against cancer...

“Studies show that consumption of green and yellow leafy vegetables was associated with lower levels of stomach cancer.. consumption of fruits and vegetables has been associated with decreased risk of cancers of the colon and rectum... lower levels of beta carotene with an increased risk of bladder cancer... women with breast cancer had lower concentrations of plasma beta carotene than those free of disease. Lowest ingestion of beta carotene had the highest risk of developing breast cancer after other factors were weighed, including family history, age of first pregnancy etc...”

...High beta carotene intake was associated with a 32 percent lower risk of cervical cancer lower levels of serum beta carotene appear to significantly increase the risk of squamous cells carcinoma of the lung.

Carrots contains a lot of beta carotene so it can reduce wide range of cancers including lung, mouth, throat, stomach, intestine, bladder, prostate and breast.

Mindell quotes that increasing calcium intake lowered the rate of cell turnover in the colon dramatically and cancer is characterised by rapid cell turnover.

Beta - Carotene: Is found in dark leafy vegetables and yellow and orange fruits and vegetables, beta - carotene is a potent antioxidant . It is converted into vitamin A as the body needs it. People who eat diets rich in beta- carotene have lower levels of many different types of cancer including breast cancer, colon, rectal cancer and have lower levels of coronary artery disease.

Canthaxanthin: A carotenoid found in mushroom and used as a food colouring in some cheese has been shown to help prevent breast cancer in laboratory rats.

Lycopene: Which gives red colour to fruits and vegetables protect against certain forms of cancer.

Luten: Extracted from marigold, spinach and kali has anticarcinogenic properties.

Catechins: Are bioflavonoids found in green tea and some soft fruits. It reduces the risk of gastrointestinal cancer and may help fight against viral infections.

Coumarins: Found in many fruits and vegetables, including parsley, liquorice, cereal grains and citrus fruits, makes blood thin, protect against heart disease and stroke by preventing blood clots and alter a healthy cell into one that is susceptible to cancerous growth.

Cruciferous Indoles: Are found in cruciferous vegetables (cabbage, broccoli, Brussels sprouts) helps prevent breast cancer by inducing protective enzymes that deactivate oestrogen which is responsible for the growth of oestrogen sensitive tumours.

Ellagic Acid: Found in cherries, grapes and strawberries, counteracts synthetic and naturally occurring carcinogens, thus, preventing them from turning healthy cells, into cancerous ones.

Gutathione: A combination of three amino acids, glutamate, glycine and cysteine is a potent antioxidant that deactivates free radicals which can speed up the aging process. It is most potent anticarcinogen in the body. It prevents the harmful side effects of high dose radiation therapy and chemotherapy. Every cell can make glutathione from its components, which are found in fruits, vegetables and raw meat.

Isoflavones: Found in legumes such as beans, peas, lentils peanuts block oestrogen receptors thus preventing the growth of an oestrogen dependent tumour cell, the kind of cell prevalent in breast cancer. It also deactivates oestrogen before it can trigger the growth of cancerous cells. Lignans - the flax plant reduces the growth of both precancerous and cancerous cells in the breast and colon, deactivate potent oestrogens that stimulate tumour growth, prevent free radicals from damaging normal cells, making them susceptible to cancerous growth.

Limonene: A constituent of citrus oil reduces the growth of mammary tumours.

Lycopene: A member of the carotenoid family. Lycopene is found in foods such as tomatoes, ruby red fruits and red peppers. There is inverse relationship between blood levels of lycopene and cervical cancer. People with low level of serum lycopene developed bladder and pancreatic cancer.

Monoterpenes: The potent antioxidant found in citrus fruits and vegetables such as Parsley, carrots, broccoli, cabbage, ambergines, cucumbers, mint, basil.

Omega -3 Fatty Acids: It refers to polyunsaturated fatty acids: docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA). Omega - 3s are found primarily in marine plant life called phytoplankton and on land in linseed. Fish that feed on omega - 3 rich plants are primary sources of omega - 3 for humans. This protects against heart disease and cancer and can be used in the treatment of arthritis. It reduces the size of the tumour and prevent blood clots.

Pectin: Soluble fibers found in fruits such as apples and pulpy portion of grape fruit, reduces cholesterol and helps prevent heart disease. Pectin of citrus fruits protect cancer and prevent cancer cells from clumping together, which promotes metastasis.

Phonemic Acid: Found in garlic, linseed, soybean, green tea and citrus fruits are anti oxidants. Which helps prevent free radical damages that to normal cells. Phonemics also neutralise carcinogens.

Phytaetes: Found in soyabeans and cereal grains deactivate steroid hormones that promote tumours .

Polyacetelenes: Found in umbelliferous vegetables such as carrots, celery, parsnips has prostaglandin's which can contribute to tumour growth as well as destroy benzeopyrene, a lethal carcinogen.

Protease Inhibitors: Found in soyabeans, kidney beans, chick peas and whole grains such as flex and oats can prevent the conversion of normal cells to malignant ones in the earliest stages of cancer.

Psoralens: Are found in celery, lettuce, lemons and limes can treat psoriasis and lymphomas.

Quercetic: Found in red and yellow onions activates potent carcinogens.

Quiones: Found primarily in rose inhibit carcinogens and protect against cancer.

Retenoids: Found in foods of animal origin liver, egg yolk, milk, butter protect from cancer of lung and oral cavity.

Sulphides: Found in garlic and cruciferous vegetables deactivate steroid homones that promote the growth of tumours and also inhibit carcinogens and enzymes that can cause cancer.

Sulphorephane: Found in broccoli, brussels sprouts, Kale , cauliflower and green onions block carcinogens from damaging healthy cells.

Gala and Gala writes the following cases cured by wheat grass therapy.

...Mr. George Smith 50 years, a resident of Kensas city - USA, suffering from cancer of jaw bone and check, he was given chemo therapy but after operation the wound did not heal. He got wheat grass therapy for seven week. He drank wheat grass juice four times a day, the wound was washed with juice and dressing done after soaking the dressing in wheat grass juice. His 14 year old wound healed and there was improvement in his health.

...As case of blood cancer (leukaemia) completely cured after the continuous treatment of wheat grass juice a cup four times a day.

CHAPTER - III

METHODOLOGY:

This chapter presents the research design, description of sample, research setting, development of intervention program, data collection tool, data collection procedure and plan of data analysis.

Research Design:

The research design used for the study was quasi - experimental design. According to Broota (1989 p, 9-10) all such experimental situations in which experimenter does not have full control over the assignment of experimental units randomly to the treatment conditions or the treatment cannot be manipulated are collectively called quasi - experimental designs. Quasi - experimental investigations are as sound as experimental investigation, but are less powerful in drawing causal relationships between independent and dependent variables.

	Group	Interventions	
Pre-test	Experimental	Instruction package Counselling Wheat grass	Post-test
Pre-test	Control		Post-test

The design self explains that pre-test was administered to both the groups before they take Chemotherapy. The experimental groups was exposed to intervention. No intervention was done to control group. Then post test was administered to both the groups after exposing the experimental groups to intervention program.

According to best J (1882 p. 40) Variables are the condition or characteristics that experimenter manipulates, control or observes. The experimental variable used in the study were distribution of few instruction sheets, counselling by health personnel and wheat grass.

The dependent variables were the changes in the white blood count, platelets and haemoglobin shown by blood test.

The extraneous variables were the uncontrolled variables which may influence the dependent variables. In the present study the extraneous variables were the age, sex, education, type of family, food habit, economic status, stage of cancer etc. These were not controlled in either of the group.

Selection and Description of the Sample:

The sample selected was convenient. The subjects included in the sample were men and women who were interested to take part in the study and who said they will come to the respective hospitals for next cycle of chemotherapy. They were identified in the hospital when they came for chemotherapy.

Development of Intervention Program:

Extensive study of literature and observation of treatment program was done in Nisargopachar Gram Sudhar Trust of Uralikanchan, Pune Maharashtra by the investigator.

Discussion with professionals, colleagues and investigators, own experience helped her a great deal in developing intervention program.

The plan and content of it was discussed with experts of Nature cure for content validity. Final plan was translated into Nepali language.

Intervention program included counselling and handing over instruction sheet containing advantage of natural food, schedule to follow (7-8 times a day) process of growing of wheat grass therapy, and ways for healthy life (Appendix - I wheat grass was provided). During hospital stay. Provision of wheat grass was made available if the subject wanted it at home.

Pilot Study:

The pilot study was done in the Institute of Alternative Medicine (IAM), Gha - 1/691 Mali Gaun, Ward: 5, Kathmandu. The results we as follows:

Case No. 1

Mr. A 49 years old male with lipoma since 7 Months.

The case was diagnosed in TATA Memorial Hospital in May 1997. After 1st Chemo WBC count decreased to 2100, haemoglobin to 12.9. Second chemo could not be taken in 12 June. The case was referred to AIM on 14th June and treatment was continued for a week. He was provided with wheat grass and prescription was made to take at least one litter of extract of different fresh fruits and vegetables per day one at a time in small amount. The extract was just prepared before eating each time, variety of fruits such as orange, mausam, pineapple, pomegranate, papaya, mango, banana, grapes and vegetables like cabbage, spinach, pumpkin, cucumber, roots like carrot, beets etc., were used because patients could not take mono food. The blood count was taken on 19 June and the result was as follows: WBC count 4,100, Haemoglobin 14.2. second chemo therapy was given on 20 June in Everest Nursing Home, Baneswor. After two weeks of his chemotherapy he continued to take extract again. The WBC count on 19th July was 4,900 and Haemoglobin 14.5 gm.

Case No. 2

Mrs. B aged 46 years. A case of carcinoma breast.

She was diagnosed and operated in TATA Memorial Hospital Bombay. Her blood count before giving chemo-therapy was WBC :9,500 and Hb: 9.5 . after first chemo-therapy WBC count decreased to 5,400 and Hb to 7.5.

She came back to Kathmandu and extract of wheat grass was started for three weeks. Her blood count raised to 19500 and Hb to 11.5. Natural therapy could not be continued as she had gone to Bombay after that.

Second Chemo-therapy was taken in Bombay. After a week of this second cycle, her WBC count went down to 5,400 and Hb: 7.5

She came back to Kathmandu and the Natural Therapy was started. Again Blood count was taken after three weeks, which showed WBC:13,500 and Hb: 11.5gm. however, she could not continue with wheat grass extract due to nausea and she started taking extracts of carrot, cucumber, water melon, cabbage. Her blood count remained constant of 5,500 for 6 weeks.

Data was analysed seeing the difference in whole blood count (WBC) and haemoglobin(HB) before and after extract therapy.

Table-1: Blood Report Before and After Therapy:

Case No.	Before Treatment		After Treatment				Duration of Treatment (in weeks)
			First Time		Second Time		
	WBC	Hb	WBC	Hb	WBC	Hb	
1	2,100	12.9	4,100	14.2	4,900	14.5	01
2	5,400	07.5	19,500	11.5	13,500	11.5	03

Table-2: Comparison of WBC with Wheat Grass Extract and Other Extracts:

Item	WBC Count	1st Time	2nd Time	3rd Time	4th Time
1	After wheat grass extract	19,500	13,500	-----	-----
2	After extract of other vegetables and fruits	-----	-----	5,500	5,600

The above tables show that WBC and Haemoglobin have been increased in all the cases after taking the extract of natural food. Among the extracts of natural food wheat grass has shown the best results that means wheat grass has positive impact significantly for WBC and Hb of cancer patients.

Data Collection Tool:

Data collection tool mainly consisted of format for record review along with one or two question which were asked to confirm the follow up of intervention program. The record review included age, sex, diagnosis, stage of cancer, treatment prescribed as surgery, radio therapy, chemotherapy etc. The doses of chemotherapy, its type frequency, blood count as white blood cells (WBC), haemoglobin (Hb), platelets. Questionnaire consisted of how many times a day and for how many days the client ate natural food as prescribed (Appendix - II).

Data Collection Procedure:

Permission was taken from the respective hospital for data collection and intervention program. Nine health personal were used for data collection. They were working for radiology department of Bir Hospital, oncology units of Kanti Hospital and medical surgical wards in Teaching Hospital. They were briefed about the research design, objectives characteristics of sample, sampling method, data collection tool, ethical aspects and data collection procedure. They were provided data collection format, intervention package and wheat grass. Verbal permission was taken from individual clients about their involvement in research study. Data collection was done when clients came for chemotherapy as out patient or in patients in the respective hospital Supervision of data collection was done by investigator. Few meetings were held with data collectors to clear their doubt, to see the completeness of data and to solve any problem that raised during study. New individuals were taken in between to replace the expired clients. After replacing clients also there was expiry of clients both in control and experimental groups. Data were collected two times.

Pre-test: When the patient came to the hospital for the chemotherapy when the study was started to both the control and experimental group.

Post-test: When the same patient came to the hospital for another course of chemotherapy. It varied from four days to weeks after pre-test.

Plan of Data Analysis:

Paired 't' test was selected to find out the significance of difference within and between the blood test of control and experimental group during pre-test and post test. The level of significance was set at 0.5 level for testing the hypothesis.

CHAPTER - IV

ANALYSIS:

Data was collected from 64 cancer patient 35 control and 29 experimental who were under chemotherapy treatment. Percentage of patient from Bir Hospital was 34.4 (N = 22), Kanti Children Hospital was 35.9 (N = 23) and Teaching Hospital 29.7 (N = 19). Although attempts were made to take 26 patients from each hospital it was not possible due to eight respondents of Kanti Hospital, 5 of Teaching hospital died during study period and patient were replaced for the dead ones. But 13 patient failed to come for follow up. Three went to India for further investigations, 6 discontinued treatment due to severe side effects and 4 could not be traced.

The age group of the subjects under study ranged from 5 months to 70 years of age. Maximum numbers of patients (20) 31.3% were under 10 years of age. Six patient in 60-70 years of age .

Sex of the patient also could not be matched. Therefore (40) 65.5% were males, 17 in experimental group and 23 in control group. Number of females was equal in both group.

Staging of cancer was not done yet for 29, 45.8% patient 15 in experimental and 14 in control group. Maximum number of subjects belonged to 2nd stage (N = 17, 26.6%), followed by 4th, 3rd and then 1st stage respectively.

All patient were under chemotherapy. Twenty nine patient 45.3% had already undergone surgery 15 in experimental and 14 control group. Nine patient 14.1% (6 experimental 3 control) were receiving radiotherapy.

All patients except one received more than one medicine at a time.

Chemotherapy received by subjects were as follows:

Vincristine 35% (N = 23), 12 in experimental and 11 controls.

Methotrexate 14.1% (N = 9), 4 experimental and 5 controls.

Adrimycin 35.9% (N = 23), 10 experimental 13 controls.

Cyclophosphamide 31.3% (N = 20), 12 experimental and 8 controls.

Cysplation 21.9% (N=14), 3 in experimental and 11 in control.

Etosid 35.9% (N = 23), 12 experimental and 11 controls.

Haloxan 7.8% (N= 5), 2 experimental, 3 controls.

Bleomycin 3% (N=2) 1 each group.

Endoxan 25% (N= 16), 4 experimental 12 controls.

Aradia 16% (N = 1) in control only.

Mercaptopurine 1.6% (N=1) in control only.

Fluracil 20.3% (N = 13) 7 control and 6 experimental.

Period of Cancer:-

Subjects suffered from cancer since 3 months to 7 years back. Most patient were diagnosed within one year 59.4% (N = 38).

Duration of Experiment:

Though it was intended to do experiment for 4 weeks period but it varied from one to five weeks. As patient remained in hospital only for few hours to weeks. In addition to counselling for taking all natural foods, they took wheat grass extract during the hospital stay.

Those patient who remained in hospital only for few hours they carried wheat grass with them for a week, some came to pick up from home and some did not. Some planted wheat grass at their home and some did not. Some patient could not tolerate due to diarrhoea and they discontinued. Some patient still continued but blood report was not available as they did not wanted to go under investigations.

Table: 3 - Frequency of Patient in Experimental Group by Duration of Experiment

Experiment Period Weeks	Frequency	Valid Percent	Cumulative Percent
1	1	3.4	3.4
3	15	51.7	55.2
4	12	41.4	96.6
5	2	3.4	100
Total	29	100	100

Type of Cancer:

About one third of patient (N = 21) 32.8% suffered from blood cancer and this was more prevalent among children. Second was cancer of respiratory tract (N = 13) and lung cancer was most common among the cancer of respiratory tract. There were two case of metastasis of lung cancer to brain and abdomen. Cancer of reproductive organs were 3rd on the list (N = 11). Cancer of breast and cervic were most common among the cancer of reproductive organs. Stomach cancer was most common among the cancer of gastro in testinal tract. Least common cancer were the cancer of lymph, bone, endocrine gland, fatty tissue and neck. Frequency of respondents by type of cancer are given below.

Table: 4 - Frequency and Percentage of Respondents by Type of Cancer.

Type of Cancer	Frequency	Percentage
Blood (Leucemia)	21	32.8
Respiratory Organ	13	20.3
Gastrointestinal	8	12.5
Reproductive Organ	11	17.2
Others	11	17.2
Total	64	100

Table:5 - Frequency of Respondents by Cycle of Chemotherapy

Cycle	Frequency	Valid Percent
1	12	18.8
2	12	18.8
3	17	26.6
4	7	10.8
5	6	9.4
6	8	12.5
7	2	3.1
Total	64	100

Most patient 26.6% were in 3rd cycle followed by 1st and 2nd.

Blood count of all subjects were noted two times. Once when patient came for present chemotherapy cycle and another time when they came for next cycle. This varied from one week to 7 weeks in both groups. Patient suffering from leukaemia (blood cancer N= 21, 32.8%) 8 experimental and 13 controls got chemotherapy more frequently than subjects suffering from other types of cancer

Non Parametric Statistics:

Paired T test were done to see the effect of natural food on preventing bone marrow depression in terms of blood value as haemoglobin, percentage, plateles count and white blood cell counts.

The blood values were compared within and between control group and experimental group. Mean, standard deviation, mean difference of respondents are given below.

Table:6 - Paired Samples Statistics of Haemoglobin Value

	Group	Mean	N	Standard Deviation	Standard Error Mean
Control	Before	10.251	35	2.870	.485
	After	10.571	35	2.411	.408
Experimental	Before	10.648	29	2.222	.413
	After	11.007	29	2.363	.439

Table:7 - Paired Samples Test of Haemoglobin Values in Study Groups

	Group	Mean Difference	Difference in Standard Deviation	Standard Error Mean	t	df	Sig. (2-tailed)
Control	Before						
	After	-.320	2.103	.356	-.900	34	.374
Experimental	Before						
	After	-.359	2.437	.453	-.793	28	.435

Although there was more rise in the haemoglobin level of respondent in experimental group than in the control group, the rise was not statistically significant

Table:8 - Paired Samples Statistics of Platelets Count

	Group	Mean	N	Standard Deviation	Standard Error Mean
Control	Before	160615.71	35	94069.46	15900.64
	After	176914.29	35	99149.14	16759.26
Experimental	Before	159758.62	29	86716.56	16102.86
	After	178034.48	29	57921.43	10755.74

Table:9 - Paired Sample Test of Platelets Count

	Group	Mean Difference	Difference in Standard Deviation	Standard Error Mean	t	df	Sig. (2-tailed)
Control	Before						
	After	-16268.57	80027.02	13527.04	-1.203	34	.237
Experimental	Before						
	After	-18275.86	81083.69	15056.86	-1.214	28	.235

Although there was more increase in the platelets count of experimental group than in control group, it was not statistically significant.

Table:10 - Paired Samples Statistical of White Blood Count

	Group	Mean	N	Standard Deviation	Standard Error Mean
Control	Before	11117.14	35	11472.67	1939.23
	After	10940.00	35	12934.25	2186.29
Experimental	Before	9005.17	29	7595.47	1410.44
	After	13050.00	29	18015.52	3345.40

Table:11 - Paired Samples Test of White Blood Cells Count.

	Group	Mean Difference	Difference in Standard Deviation	Std.Error Mean	t	df	Sig. (2-tailed)
Control	Before						
	After	177.14	10593.20	1790.58	.099	34	.922
Experimental	Before						
	After	-4044.83	18388.15	3414.59	-1.185	28	.246

Although the WBC count was raised in experimental group and dropped in control group it was not statistically significant.

Therefore the null hypothesis “ there is no significant difference between subject who take natural food during chemotherapy and who do not” is accepted.

In experimental group four patients experienced less vomiting and 20 patients didnot vomit and all felt less weakness after following the instructions of natural food than they felt following the prior chemotherapy when they had not learned about natural food.

CHAPTER - V

Discussion, Delimitations and Recommendations

Discussions:

The finding of the study showed that although there was more rise in the haemoglobin, white blood cell count and platelets counts of experimental group than control after intervention program the rise was not statistically significant. The result might have been affected by the following reasons.

1. There was no control in the confounding variables of the respondents such as:
 - previous knowledge of natural food
 - likes and dislikes towards natural food
 - economic status to afford natural food,
 - attitude and belief towards natural food
 - instructions towards food by their doctors.
2. There was no control on the side effects felt by the respondents like nausea vomiting, diarrhoea after chemotherapy which might have prevented them taking natural food with a fear of getting these symptoms.
3. Some patients were not liking the taste of raw food, wheat extracts, sprouted food and might not have followed the instruction exactly.
4. Giving natural food also depends on the caregiver's attitude, belief and knowledge regarding food. Caregivers were not involved during counselling of the patient.
5. The controls were never interviewed regarding their intake of natural food.
6. The experimental group were not supervised or followed up to ensure that they took natural food in their diet regularly in sufficient amount.
7. Since the schedule of chemotherapy was different in different individuals, the experiment days were not the same for everybody.
8. Interval for taking the blood count was also not uniform.
9. Since all types of cancer patients were included in the study, blood values varied too much in leukaemia (blood cancer) and other cancers.

Delimitations of the Study.

1. The sample size became small at the end of the study.
2. Study time was very short. There was a lot of tension and hurry to complete the study. Because the research unit allocated only one month period. This prevented the replacement of experimental and control subjects according to the plan (the matching of the group by age, sex, stage, cycle of chemotherapy and type of cancer.)
3. Some patients went to another hospital in a country outside the country during the study period and some discontinued treatments.

4. Time of testing blood differed in patient according to their chemotherapy schedule they did not like to go under investigation for the sake of study.

Implementations

Since this research had many limitations and delimitations, the natural food can be used to provide energy to the patients.

Recommendations

On the basis of the findings of this study it is recommended that:

1. Similar study can be conducted with a large sample of patient.
2. Similar study can be conducted with hospitalised patient where confounding variables can be controlled.
3. A study could be done on patient whom no other treatment like chemotherapy, radiation or surgery can be performed for a long time.
4. Comparative study could be done with patients suffering from different kind of cancer.
5. A qualitative study could be conducted on experience of cancer patients taking natural food

Similar study could be done following the patient for longer period, may be 3-6 months.

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Appendix: I

FOOD AND LIFE STYLE FOR CANCER PATIENTS

Instructions to Patient

Dear friends: I am conducting a research on use of Natural Food Products on Preventing Bone Marrow Depression in Cancer Patients who are under chemotherapy

Would you like to try natural food as a part of treatment ?

This will prevent bone marrow depression and keep your blood count in good condition so that you need not postpone your chemotherapy due to low blood count white blood count should be above 4000 to take chemotherapy.

This treatment gives you energy feeds your stomach and gives satisfaction as well as improve other related illness.

If you are ready for treatment please follow the following schedule.

5.30 - 6.00 am	Water 200ml+ Lemon 1/2 + Honey 2 Tea spoon
7.30 am	Wheat grass/barley grass extract + equal amount of water
9.30 am	Salad made with carrot, beat, tomato, cucumber, spinach, coriander, mint leave, broccoli, cauli flower, sprouted seed of mung
11.30 am	Normal food
1.30 noon	Fruit juice of any mousami, orange, apple, papaya, pomegranate, grapes, mango, guava, apricot, amala, water melon
3.30 pm	Extract of wheat or extract of any one vegetable carrot, beat, cabbage, tomato, cucumber, couli flower, broccoli flower, spinach, tulsi, coriander etc.
5.30 pm	Honey (2 tea spoon) + lime 1/2 + water 200/400 ml or vegetable soup.

Note: *If you are not able to eat different food and fruits wheat grass can be taken 5 or 6 times a day (200 ml every three hour)*

These food contain vitamin A, C, E, beta carotene and selenium and prevent further growth of cancer also.

Change the fruit or vegetables according to your choice. Clean, wash and soak vegetable/fruits in salt water or potassium permanganate for 10 minutes. Start less amount of wheat/barley juice in the beginning then increase the amount gradually. Dilute the extract with the amount of water you tolerate easily. Contact researcher for any problem with this diet between 4-7 PM at her residence for future advice phone 431934 in between 4-7 pm.

Show your blood report and get other advice, rules for healthy life and natural diet.

Natural Diet

Live, natural positive food is essential for health. Two principle meals in a day are sufficient to fulfil your energy needs. Use one cereal at a time either Roti or Rice. You can replace Roti, Rice with boiled or roasted potato, sprouted mung (green gram) or, yam or fruits and milk or curd or raw diet.

At the time of lunch eating food, calm and quiet surrounding is necessary. Avoid meals immediately after excessive manual work, worry, exercise and Yoga, anger, quarrels, after bath, sad feelings and any instance when you do not feel like eating. Physical and psychological peace helps proper digestion and assimilation.

Have your meals between 10 a.m. to 12 noon in the morning and 6 p.m. to 8 p.m. in the evening. Some rest is essential after meals. Continuously chewing something, intermittent snacks, chocolates, tea, coffee will weaken your digestion. Eat main meals 3 hours before sleeping.

Fresh fruits and vegetables, sprouts, milk, butter milk, yoghurt, butter, vegetable and fruit juice are non stimulating (satwik food). For taste use ginger, jera, coriander, coconut, curry leaves, capsicum, turmeric. Prepare chatney by using these ingredients.

Fried, refined food stuffs, spicy, salty, too much oily, sour, bitter items Avoid snacks, pickles, papads, sweets, chocolates, ice-cream, tinned food, eggs, meat, fish because of their stimulating properties (rajasik and tamarisk).

Every morsel of food should be properly masticated to aid digestion by salvia and other digestive juices of stomach and intestine.

Eat raw diet and cooked diet at separate meals. Do not combine starch and protein, protein and fat, two protein, two cereals, sweet and sour fruits.

Those who are suffering from flatulence and constipation should avoid gram, onions, cabbage, potatoes, fried items, bajra, pakoda, sweets, noodles, bread, and other fermented foodstuffs. Eat raw diet and salad regularly.

Tulsi Kadha (Herbal Tea) Take 10 leaves of tulsi, 2-3 leaves of lemon grass and a small piece of ginger and boil in 200ml. Of water for 5 min. Strain and add jaggery to taste. This decoction acts like a medicine in cold, cough, bronchitis and improves digestion.

Raw Vegetable Juices: Juice of bottle guard, carrots, green vegetables, spinach, cabbage, tomatoes, coriander can be extracted with the help of mixer after cutting these vegetable into fine pieces and grassing them in a mixer. Dose of vegetable juices is 50 to 200 ml. And will depend upon age of the patient and appetite.

Fruit Juice : Can be extracted with the help of a juicer or after squeezing them through fine muslin cloth.

Vegetable Salad: Use raw carrots, tomatoes, beet, cucumber, cabbage, lettuce, radish, coriander, spinach, onions to prepare different seasonal salads. Fresh salads provide enough fiber for intestinal motility and acts as anti oxidants. It also supplies all essential vitamins and minerals.

Natural Condiments: Cooked vegetables are easier for digestion. For flavour and taste ginger, coconut, jeera, coriander powder, termertic and curry leaves may be used. Prepare chatney by grinning all these substances for natural taste.

Curd: Culture luke warm milk (3/c) by adding little quantity of butter milk. Curd occurs easily in summer. Four to six hours after culture, it will taste sweet and sour. Curd should not be too sour. Avoid in the evening and incase of skin diseases, chronic cough and cold, asthma, bronchitis and anorexia.

Butter Milk: After extraction of butter add 25% water in the curd, churn well. You may add ginger and jeera powder, butter milk is used in indigestion, diarrhoea and dysentery, colitis, anorexia, thirst, piles, urinary problems. Curds and butter milk are useful especially in summer and autumn. Use cautiously in rainy season and winter.

Wheat Grass Extracts and Sprouted Wheat:

Wheat Grass: Wheat grass consists of vitamins A, 18000 international units per -100/m, vitamin C - 100 mg/100ml, vitamin B, E, K, carbohydrates, proteins, fat, chlorophyll, magnesium, iron. It's pH is 7.4 . Chlorophyll is germicidal. Because of the high concentration of chlorophyll the wheat grass removes impurities of blood and raises the level of haemoglobin in the blood.

Wheat grass juice can be successfully employed in anaemia, high blood pressure, atherosclerosis, internal haemorrhage, Common cold, asthma, bronchitis, Constipation, indigestion and flatulence, nausea and vomiting, acidity, ulcer of stomach and the intestines, diabetes, throat pain, worms, caries and loose teeth, pyorrhoea, ulcer of gums, bleeding gums. Swelling and pain the joints, oosteoarthritis, Parkinson's disease, eczema, acne, cuts and wounds, bites, burns, inflammation of bladder and kidney, sexual debility, ear pain, pus from ear, general weakness, insomnia, headache, fever and cancer etc..

Technique for Growing Wheat Grass:

Prepare small land and devide in seven parts or take seven pots measuring one square feet and having a depth of about three to four inches. Do not mix chemical fertiliser on soil. Very good quality of big grains of 100 gm wheat shown will give about 250ml - 500ml of wheat grass juice after 7-8 days. If the quality of wheat is not good then take 200 gm of wheat seeds. The wheat should be sprouted before sowing. For sprouting, soak the wheat in water for about twelve hours, then wrap them in a wet thick cloth and tie for about 12-14 hours.

Spread the sprouted wheat close to each other on the soil bed. Cover the grains with a thin layer of earth. Sprinkle some water on it every day. Cut the grass an seventh day. Sow wheat

everyday on small piece of land or pot. After taking out the wheat grass change the soil of the pot everytime and sow in a fresh soil.

Wheat Grass Regimen:

It is always better to clean the body in the following way before starting wheat grass therapy.

- Total fasting for a couple of days, taking only water or juices or liquids.
- Empty the bowel with the help of an enemas.
- Take only raw food for a couple of days. This may include sweet and sour fruits, sprouted grains, cereals and pulses.

Wash the fresh wheat grass, crush it well on a stone platform and strain the juice. Electric juicer or mixer also can be used to make the juice and consume soon after it is extracted.

Continue to take 50 ml juice every day in order to maintain proper health and prevent illness. Some people may complain nausea, vomiting, cold, diarrhoea, fever. Therefore start taking little amount juice diluting with water. Take juice in empty stomach. Increase the intake of the wheat grass juice gradually. In ordinary illness 100 ml of juice per day is adequate. But in the case of serious or chronic disease 250 to 300 ml per day should be taken.

Wheat grass juice can be used in the form of an retention enema. Before retention enema flush the intestine by water enema with some lemon juice. Most of the juice of retention enema is absorbed in the bowel.

Wheat grass juice is an effective antiseptic. A cotton gauze soaked in the wheat grass juice can be placed, on a cut, wound, abrasion, a boil, non healing wound. Massaging or washing the skin with wheat grass gives relief in skin diseases.

Rules for Healthy Life

Health is defined as the normal state of body, mind and spirit. For healthy life observe self discipline and keep balance between food, exercise, behaviour, sleep and celibacy.

Wake-up: Early in the morning one to two hours before sun rises. Brush teeth with twigs of neem, bael, khair.

Ushah Pan: Drink 200 to 400 ml. Of fresh cool water. Quantity of water will vary according to the season. Do not drink water before and after meals immediately.

Yoga and Exercise: will depend upon your age, season, disease, constitution and strength.

Prayer: Purification of “Mind, Atma and Chitta” is essential for health. Morning and evening prayer is essential for balance between body and mind.

Massage: Use gingly oil or mustard oil in winter, sesame or coconut oil in autumn and summer. Massage all parts of your body especially joints. Massage is useful in improving circulation of internal organs, skeletal muscles and skin.

Bath: In all season cool natural water is refreshing. Swimming in river, lakes, tanks gives total body exercise. Use warm water in winter and for those who suffer from respiratory disease, muscular and joint pains. Bath twice a day especially in summer.

Self Discipline: Wear white or light coloured clothes in autumn and summer and woollen dark coloured garments in winter. Cotton garments especially under wears are hygienic in hot place. Excessive exercise, late nights, excessive entertainment, TV, cinema, loud music, listening and speaking culturally and socially bad words, stimulating literature, scenes, taking tomato and rajasil food, thought and behaviour is harmful for health.

Sleep: From 9 p.m. to 10 p.m. in the night to 4.30 to 5 o'clock in the morning is sufficient. Children, pregnant women, old and thin persons, manual labourers can take afternoon nap. (15 to 30 min.). Afternoon nap in autumn and summer will keep you fresh. For calm and quiet sleep meditate before you go to bed.

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Appendix: II

**Use of Natural Food on Preventing Bone Marrow Depression in
Cancer Patients who are under chemo- therapy**

Instruments:

Site _____ Date _____

Name of the patient _____ Age _____ Sex M/F _____ Phone: _____

Address _____

Type of cancer _____ Stage of cancer _____

Treatments taken : Surgery _____ Radiotherapy _____ Chemotherapy _____

Present cycle of chemotherapy _____

Name of medicine _____

=====

Report of present blood test _____ Date of blood test _____

Haemoglobin _____

Platelets _____

White blood test _____

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Intervention :-

Counselling	Yes	No
Handing instruction sheet	Yes	No
Giving wheat grass	Yes	No

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When patient comes for next cycle of thepray _____

Interview those whom intervention was done

Did you take natural food Yes No

If yes ?What did you take, how many times a days ?

How much instruction were followed ?

Wheat grass _____

Fruits juice _____

Raw vegetables _____

Vegetables guice _____

Fresh salad _____

Vegetable juice _____

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Report of blood of all patient

Haemoglobin _____

Platelets _____

White blood cells. _____

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