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A Review on Statistics of Cancer in India

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Abstract: *Today, cancer is a common household word, each of us is closely associated with at least one near and dear one, a family member or a friend, a neighbor or a colleague, diagnosed with cancer. In India, there is also a perception that cancer incidence is on the increase; and a hope that perhaps with the advances in technology, cancer is diagnosed more frequently may be a change in our attitude and approach, the myths associated with cancer are vanishing and we are more open to accepting cancer diagnosis and discussing cancer more openly. Cancer can increase through exposure to cancer causing agents. These agents may be biological (specific viruses or bacteria), physical (ultraviolet light, x-rays) or chemical. Only a minor fraction of chemicals cause cancer and these are referred to as 'carcinogens'. Our environment is constantly changing. There is no denying that. However, as our environment changes, so does the need to become increasingly aware of the problems that surround it. So it is important to improve awareness about breast cancer and a multidisciplinary approach to cancer treatment is essential and this has to be made available at all Regional Cancer Centers*

Keywords: *Cancer, Risk factors, awareness, Prevention.*

I. Introduction

All across the world, people are facing a wealth of new and challenging environmental problems every day. Pollution of air, water and soil require millions of years to recoup. The global burden of cancer continues to increase largely because of the aging and growth of the world population and an increasing adoption of cancer-causing behaviors, particularly smoking, within economically developing countries. Female breast, lung, and colo- rectal cancers are occurring in high frequencies in many economically developing countries, in addition to the disproportionately high burden of cancers related to infections.(Jemal A, et al, 2011) This is the second most common disease after cardiovascular disorders for maximum deaths in the world (Jemal A et al, 2007). It accounts for about 23 and 7% deaths in USA and India, respectively. The world's population is expected to be 7.5 billion by 2020 and approximations predict that about 15.0 million new cancer cases will be diagnosed; with deaths of about12.0 million cancer patients (Brayand et al, 2006). The incidence of breast cancer in developing countries is rapidly on the rise. It is alarming that breast cancer is generally detected at advanced stages when a cure is not possible. The incidence of breast cancer increases with increasing age across the globe. However, the average age of presentation for breast cancer in the Indian population is widely reported to be around 10 years younger compared to the developed world and can have devastating effect on this predominantly young population (Sabu et al., 2010).

According to a World Health Organization report, a premature death by non-communicable diseases is one of the highest in India. Of all the other non-communicable diseases like cardiovascular ailments, chronic respiratory problems and diabetes, cancer is a major public health concern. Although scientists have identified many risk factors that increase a woman's chance of developing breast cancer, they do not yet know how these risk factors work together to cause normal cells to become cancerous. Most experts agree that breast cancer is caused by a combination of genetic, hormonal, and environmental factors.

India is rapidly stepping towards industrialization vis-a- vis urbanization resulting in change of lifestyle factors. These factors possibly contributed to a gradual increase in the incidence of breast cancer in the country. The burden of breast cancer will continue to grow not only in terms of the absolute number of cases but also in terms of incidence. As mammography will be difficult to implement in India for various reasons, efforts should be made to detect breast cancer at an early stage by educating the population about risk factors and through screening by physical examination or by self-breast examination. (Murthy N.S, 2009). A significant proportion of Indian breast cancer patients are younger than 35 years of age. This proportion varies between 11% at Tata Memorial Hospital (Dinshaw K A et al, 2006) to 26% at SGPGIMS, Lucknow (Agarwal et al, 2007).

Over the last 30 years, scientist have worked hard to identify carcinogenic substances in the home, work place and general environment that cause cancer. Evidence for cancer causing substances and their risk comes from three sources namely human studies, animal studies and laboratory experiment with human cells. Evidences from each of these sources is important in helping public health officials decide whether exposure to certain carcinogenic substances needs to be reduced or eliminated. (Ingole S. P. et al, 2013)

For the countries for which national incidence or mortality data were available, we performed some predictions to take into account trends in the cancer rates. Although this should produce more accurate estimates

at the country level, it has a limited impact globally given these prediction methods were not used for the most populous countries of the world (e.g., China, India, Indonesia and Brazil). In addition, cancer incidence and mortality trends often vary by direction and magnitude according to cancer site, sex and population, so while the overall effect is difficult to deter- mine, it is likely to be small. (Ferlay Jacques etal, 2010)

Non-communicable diseases including cancer are emerging as major public health problems in India. (Cherian Varghese). In India, cancer of the breast is the most common cancer among women in many regions and has overtaken cervix cancer, which was the most frequent cancer a decade ago. The cancer burden in developing countries is reaching pandemic proportions. Cancer is one of the leading causes of death in India, with about 2.5 million cancer patients, 1 million new cases added every year and with a chance of the disease rising five-fold by 2025. Indian Council of Medical Research (ICMR) has urged the Government of India to make cancer a notifiable disease. The Indian Council of Medical Research (ICMR) started a National Cancer Registry Programme (NCRP) in the year 1982 with the main objective of generating reliable data on the magnitude and pattern of cancer in India. Recently, NCRP has published a report on Time Trends in Cancer Incidence Rates (NCRP 2009). This report depicts the changes in incidence rates of cancer from five urban registries and one rural registry of India(ICMR, 2009)

A growing body of evidence from experimental, body burden and ecological research indicates that there is a connection between environmental factors and breast cancer. There are over 85,000 synthetic chemicals on the market today, from preservatives in our lipstick to flame retardants in our sofas, from plasticizers in our water bottles to pesticides on our fruits and vegetables. More than 80 percent of breast cancer is thought to be associated with environmental factors that include exposure to contaminants, lifestyle and diet, and exposure to ionizing radiation. (Charlier CJ, 2007). The important lifestyle factors and Substances in the environment are known to cause or are likely to cause cancer in humans are (Cancer and the Environment)

- Tobacco
- Diet/Weight/Physical Inactivity
- Alcoholic drinks
- Ultraviolet radiation
- Viruses and bacteria
- Ionizing radiation
- Pesticides
- Medical drugs
- Solvents
- Fibers
- fine particles and dust
- Dioxins
- Polycyclic aromatic hydrocarbons (PAHs)
- Metals
- Diesel exhaust particles
- Toxins from fungi
- Vinyl chloride and Benzedrine.

Tobacco is the most important identified cause of cancer and is responsible for 30 to 50% of cancers in men and about 10-15% of cancers in women, in different registry areas (NCRP-2008).

As distinct from lifestyle choices exposure to carcinogens may occur outside your control. Exposure may occur in the workplace, or in the wider environment through air, water or soil pollution. Due to these causing factors different types of cancer are occurred in human as Lungs cancer, Breast cancer, Stomach cancer, Gall bladder cancer, Cervical cancer, Oral cancer, Cancer of the large intestine, Cancer of the head and neck.

II. Awareness About Cancer In India

- Cancer is now one of the top causes of death in India, after heart attack, up from seventh position in 2000.
- India has some of the world's highest incidences of cancer: Cervical, gall bladder, oral and pharynx, which are also the most common.
- 70 per cent lives are snuffed out in the first year in India, due to late detection.
- 80 per cent patients consult doctors at a stage when recovery is rare.
- 71 per cent of deaths occur in the productive age band of 30-69 in India.
- 15 per cent patients are children and young adults in India, compared to the global average of 0.5 per cent.

Cancer control needs a multidisciplinary approach and palliative care is an important component of this approach. Despite its limited coverage, palliative care has been present in India for about 20 years. The past two

decades have seen palpable changes in the mindset of healthcare providers and policy makers with respect to the urgency of providing palliative care. Every hour more than 60 patients die in India from cancer and in pain. Moreover, with a population of over a billion, spread over a vast geo-political mosaic, the reach of palliative care may appear insurmountable. It is estimated that in India the total number who need palliative care is likely to be 6 million people a year. These figures are likely to grow because of the increasing life span and a shift from acute to chronic illnesses. It is estimated that 60% of the people dying annually will suffer from prolonged advanced illnesses. This means there will be a sizeable population of the aged who will have several spells of hospitalization interspersed with long periods of being confined to their beds at home. (Khosla D et al,2012). Although cancer care giving can be physically and emotionally demanding, it can also be a meaningful and satisfying experience. The phenomenon of finding good from difficult life experiences is known as benefit-finding or post-traumatic growth. Encountering a serious disease like cancer can prompt individuals to reprioritize life to better align with values, restore personal relationships, adopt a more positive self-view, and become more empathetic toward others. Recent studies have shown that both survivors and their caregivers often find benefit in the challenges associated with cancer.(Kim Y, et al, 2007).

An essential drug list has to be prepared for cancer chemotherapy and chemotherapy services for common cancers have to made available in all centre's. More than 80% of cancers in India present in advanced stages and palliative care and pain relief are essential to provide good quality life for these patients. (Ramnath Takiar*,2010) Inadequate attention to pain relief is tantamount to moral and legal malpractice and is a violation of the principle of beneficence. The medicinal use of opioids such as morphine is highly regulated by the Indian Narcotic Drugs and Psychotropic Substances Act (NDPS), and to dispense morphine to patients the hospitals must be registered with the government and adhere to a set procedure (Sharma DC, 2008). More than 75% of cancers in India present in advanced stages and Palliative care and pain relief are essential to provide good quality life for these patients. Oral Morphine is the mainstay of cancer pain management and this has to be made available at all centres. The medical doctors as well as the administrators have to be sensitised and educated about the use of Oral Morphine and the regulations have to be made simple so that this essential drug is made available to those in pain. (Cherian Varghese)

According to data from the National Health Interview Survey, approximately one in four cancer survivors has a decreased quality of life due to physical problems and one in 10 due to emo- tional problems.(Weaver KE,et al,2012). Home – based palliative care services are cost- effective as it does not entail doctors and nurses' fees and travelling to the hospital repeatedly for follow up visits and unnecessary investigations and treatments (Guidelines for Home based Palliative Care. IAPC and Can Support New Delhi. Developed under the government of India. World Health Organisation Collaborative Programme 2006.2007. Ishtihaar)

WHO and other international organizations lay emphasis on providing physical, psychosocial, and spiritual needs and to help patients achieve quality of life with supportive families. It was to address such needs and so provide holistic care that the concept of friendly neighbors who have been trained in palliative care took shape and so the Neighborhood Network of Palliative Care (NNPC) was formed in 2001. (Growing focus on palliative care. [http://www.indiatogether.org/2010/mar/hlt.palliate.htm/)

The American Cancer Society is available 24 hours a day, seven days a week online at cancer.org and by calling 1-800-227-2345 and help people through Programs and Services as: Day-to-day help and emotional support, Help with the health care system, Transportation to treatment, Lodging during treatment, After treatment, Life After Treatment Guide, Survivorship Information Resource Inventory, Breast cancer support, Cancer education classes, Hair-loss and mastectomy products, Help with appearance-related side effects of treatment, Finding hope and inspiration, Smoking cessation. (Cancer Treatment & Survivorship Facts & Figures 2014-2015)

India is the one of the few developing countries that has formulated a National Cancer Control Programme. The programme envisages control of tobacco related cancers; early diagnosis and treatment of uterine cervical cancer; and distribution of therapy services, pain relief and palliative care through augmentation of health infrastructure Suggested surrogate outcome measures include change in tobacco use, 'Knowledge, Attitude, Practice'(KAP) pattern, compliance to screening programmes, changes in referral practices and shift in stage distribution. The World Health Organization has promoted National Cancer Control Programmes and India is one of the few countries that has actively taken up this initiative. The major areas in which WHO contributes are Tobacco Control, Palliative Care and Human Resource Development. India could take up these programmes and demonstrate to the World that Cancer Control is feasible and become a model for Cancer Control Programmes in low resource settings. (Cherian Varghese)

Breast cancer awareness programs are concentrated in the cities and have not reached the remote and rural parts of the country (Agarwal G et al, 2007), Women often do not present for medical care early enough due to various reasons such as illiteracy, lack of awareness, and financial constrains. It is hardly surprising that the majority of breast cancer patient in india are still treated at locally advanced and metastatic stages (Agarwal G et al, 2007 and Aggarwal V et al, 2007)

Indian breast cancer patients present with advanced disease stage and have numerous poor prognostic factors such as large tumor, lymph node metastases, high pathological grade and poor hormone receptors status. Besides, the poor access to high-quality multi- modality treatment facilities, few treatment facilities for a huge population, and poor financial resources on the patient's part as well as the health care provider's part result in com- promised quality of care to patients with established disease. It is thus not surprising that Indian breast cancer patients have higher loco regional recurrences and poorer overall survival. The recent emphasis by governmental agencies, institutions, and non-governmental and charity organizations on improved health awareness, promotion of early detection, providing comprehensive multimodality treatment in a protocol-based manner, and providing support for breast cancer management as well as for screening and rehabilitation have resulted in an improving trend with more and more early stage cancers being diagnosed and treated timely, resulting in improving survival and quality of life of Indian breast cancer patients(Agarwal G et al, 2008). There are different approaches and models available to us to predict the burden of cancer using the registry data. Many authors have used age, period, cohort models to arrive at cancer burden in communities (Olsen, Parkin and Sasieni, 2008).

In the qualitative study, the most reasonable way to establish cancer registries covering rural areas and Next logical step would be to examine age-wise, gender wise cancers and establish national priorities. It is also important to improve the awareness among women to be aware of the importance of early screening. (Bodapati *et al*, 2013)

Key facts about the environment and breast cancer

- Seventy percent of people with breast cancer have none of the known risk factors. The so-called known risk factors, like late menopause, having children late in life, and family history of cancer are present in only 30 percent of breast cancer cases.
- Non-industrialized countries have lower breast cancer rates than industrialized countries. People who move to industrialized countries from countries with low rates develop the same breast cancer rates of the industrialized country.
- Women's higher proportion of body fat provides a greater reservoir for fat-loving pesticides, some of which are known to be hormonally active and/ or carcinogens, and is associated with breast cancer. (PSD, 1999.)
- Women may also absorb pesticides through their skin more easily than men. For example, dermal absorption of the organochlorine lindane is three times greater for women than for men and once there, fat-loving pesticides may reside in the body longer in women than in men. (Hardell L. 2003.)
- These pesticides are capable of causing profound changes to hormonally sensitive tissues, such as breast tumours. Increased fat exchange, for example during pregnancy and lactation, together with the cyclic nature of hormonal changes, also add to that greater sensitivity (Howard JM. 2003.)

Over diagnosis is defined as the detection of a breast cancer at screening, histologically confirmed, that would never have been identified clinically in the lifetime of the woman. Some overdiagnosis is likely to result from mammographically detected cancers that may have remained asymptomatic throughout a woman's lifetime. Other cases are overdiagnosed because, although they are detected early, the woman dies of other causes before symptoms would have developed. The woman would only experience the harmful effects of early diagnosis and treatment without the opportunity to benefit. Due to the invasive procedures involved and the physical and psycho-social impact of the treatment, overdiagnosis may be considered the most adverse outcome associated with mammographic screening. Unfortunately, it is not possible to recognize which individual cases of breast cancer actually result from overdiagnosis. The number can only be esti- mated at population level based on analysis of data collected over years of screening. Several studies have tried to quantify overdiagnosis of breast cancer but estimates vary widely and debate exists over the rate.2–4

Although BCS is gaining popularity worldwide, MRM still remains the gold standard for the management of breast carcinoma in the present circumstances, in most parts of India. In view of the rising incidence of breast carcinoma and the prevailing controversies in its management, it is recommended that they should preferably be managed by surgical oncologists for improvement in the patient's outcome.(Sandhu DS et al,2010) Potential barriers to effective screening also include lack of necessary infrastructure and socio cultural influence on compliance. For screening to succeed, a high level of compliance is necessary, not only with initial screening but also with referral for further investigation in those screened positive, and with treatment in those with confirmed diagnosis. In a trial being conducted in Mumbai, compliance to diagnostic investigations among screen positive women has been reported as 73% (Dinshaw K. et al, 2007).

A recent Japanese study on the early effects of surgery in patients with breast cancer performing multivariate analysis reported that there were no significant differences in quality of life before and after surgery, but quality of life was significantly better among women undergoing breast conservation than those undergoing mastectomy (*Pandey M, et al 2006*)

A study comparing the short- and long-term effects of mastectomy with reconstruction, mastectomy without reconstruction, and breast conservation therapy on aspects of psychosocial adjustment and quality of life in a sample of 258 women with breast cancer concluded that overall, the general patterns of psychosocial adjustment and quality of life were similar among the three surgery groups. In addition the study results showed that during the long-term follow-up period (6 months to 2 years after surgery), women in all three groups experienced marked improvements in psychosocial adjustment (depressive symptoms, satisfaction with chest appearance, sexual functioning) and quality of life in physical and mental health domains (*Parker PA, et al, 2007*)

Accurate statistics on cancer occurrence and outcome are essential, both for the purposes of research and for the planning and evaluation of programs for cancer control. (Parkin DM,2006)

A data of cancer patients was compiled from 2004 to 2010 in India and shown in Figure 1. Based on the increasing trends of cancer patients during the last few decades, the numbers of cancer patients have been predicted by the end of 2015 and 2020 in India. These compiled data show that the number of male, female and the total cancer patients in 2004 were 390809, 428545 and 819354 respectively. The number of male and female cancer patients increased continuously up to 2009, with 454842, 507990 and 962832 cases for male, female and total cancer patients, respectively. Similarly, 462408 male cancer patients and 517378 female cancer patients were recorded, with a total number of 979786 patients in 2010. Thus, it is clear from this Figure that the number of cancer cases has increased gradually with time. Moreover, a prediction of cancer patients in 2015 and 2020, respectively, has also been made.

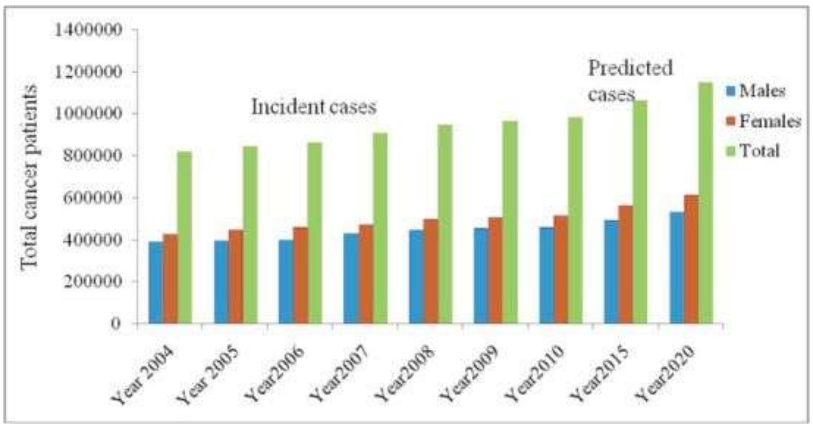
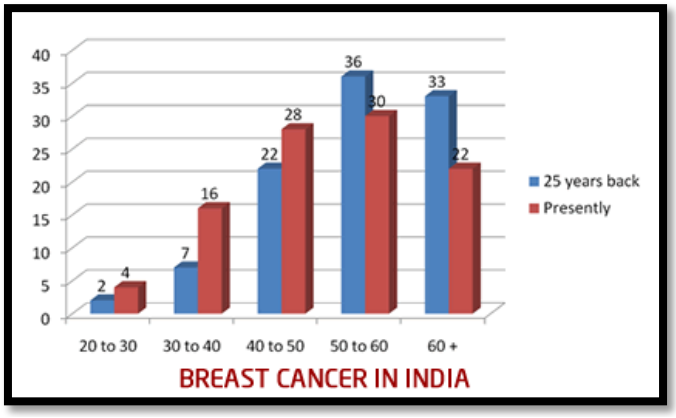


Figure 1: Year wise total cancer prevalence in India [ICMR, 2006; ICMR, 2009].

Breast cancer is a global disease. Though the majority of underlying causes, and other features are usually uniform around the world, every region has its own uniqueness for that cancer. I will discuss in the following headings: Age shift (More young ladies affected) Rising numbers of cases of breast cancer in India Late presentation (This directly decreases long term survival of the patient Lack of awareness and Screening (Screening is the single most important factor responsible for better survival of patients in the west) Aggressive cancers in young (Generally, the younger the age below menopause, the more aggressive the cancer). Age shift: Breast cancer now more common in 30's and 40's



In India, the average age of developing a breast cancer has undergone a significant shift over last few decades. Please consider the adjoining graph (This is only a rough representation of the data).

The horizontal line lower down represents the age groups: 20 to 30 years, 30 to 40 yrs and so on. And the vertical line represents the percentage of cases. The blue colour represents the incidence 25 years back, and maroon colour represents the situation today. 25 years back, out of every 100 breast cancer patients, 2% were in 20 to 30 years age group, 7% were in 30 to 40 and so on. 69% of the patients were above 50 years of age. Presently, 4% are in 20 to 30 yrs age group, 16% are in 30 to 40, 28% are in 40 to 50 age group. So, almost 48% patients are below 50. An increasing numbers of patients are in the 25 to 40 years of age, and this definitely is a very disturbing trend. (Breast Cancer India ,Statistics Of Breast Cancer In India Trends Of Breast Cancer In India, Source Of Offcial Indian Data Charts).

Women with breast cancer might develop psychological distress including anxiety and depression during diagnosis and treatment and after treatment. The psychological impact of breast cancer has received considerable attention. Since this is a separate topic, the focus here is on psychological distress as it relates to quality of life studies in breast cancer patients.

Cancer Related Problems

1. 42% (97/277) had a psychiatric disorder, 36% depression or anxiety or both.
2. Stress management skill taught had beneficial effects on reduced social disruption, and increased emotional well-being, positive states of mind, benefit finding, positive lifestyle change, and positive affect.
3. While breast cancer survivors demonstrated good adjustment on general distress following treatment, some women were at risk for sustained distress.

Psychological distress in breast cancer patients is mostly related to depression, anxiety, and low emotional functioning and almost all studies have shown that psychological distress contributed to impaired quality of life especially emotional functioning, social functioning, mental health and overall quality of life. The diagnosis of the disease, importance of fears and concerns regarding death and disease recurrence, impairment of body image, and alteration of femininity, sexuality and attractiveness are factors that can cause unexpected psychological distress even years after diagnosis and treatment [211–213].

III. Future Needs

Palliative care does require passion and commitment. Clinicians are urged to learn more about palliative care in order to overcome some of these barriers. Therefore, attending local and national presentations of palliative care to increase the knowledge base is an essential initial step. This can occur through local presentations, national meetings, on-line courses, and individual reading and exploration.

Educating people in palliative care through programs offered overseas can be useful in some instances, but it is not always an ideal solution. The way forward is to draw on the existing, successful models that have been described, to develop usable and dynamic educational initiatives within India itself, from model palliative-care teaching centers attached to inpatient or community units, thereby making close and relevant partnerships between theory and practice. (Shanmugasundaram S.,2006)

Palliative care has been consistently shown to improve quality of life by addressing the harmful effects of pain, other physical symptoms, and emotional distress.(Smith TJ et al,2012) It has also been shown to improve survival in some cancer patients and reduce family caregiver burden.(Temel JS et al,2013 and Parikh RB et al, 2013). Research in Palliative care is very essential to deliver high-quality palliative care. Finding and using the best available evidence should be part of our professional lives. Evidence-based palliative care is need of the hour. We need to do high quality trials in palliative care. Sustainable and quality research in India will be possible by establishing a network of individuals—doctors, nurses, paramedics, other professionals, institutions, and organizations, including commercial establishments who have a stake in the palliative care practice. The issues that can improve the palliative care delivery and the areas where evidence of practice is still weak can be identified by forming network and collaborative groups for the application of study and research methods in India (Mohanti BK, 2011).

The centers for palliative care teaching should be culturally sensitive and relevant to the Indian situation. Collaborations between the government of India, Indian Association of Palliative care and WHO, provide further optimism regarding future development. India has the potential to lead the way and enlighten others rather than being subservient to those countries that enjoy resource wealth.(Khosla D et. al 2012). Half way homes and Hospices may be considered through Non Governmental Agencies as well as other sources, but they can work well when they are attached to a major cancer treatment centre. (Cherian Varghese)

IV. Prevention

As per the proverb, "prevention is better than cure" the prevention strategies are crucial in cancer eradication. This approach offers a great public health concern and inexpensive long term method of cancer control. National Cancer Control Programme (started in 1975- 1976 in India) led to the development of Regional Cancer Centers (RCCs), a number of oncology wings in Medical Colleges; supported the purchase of teletherapy machines. District Cancer Control Programme was also initiated but could not result into sustainable and productive activity (National Cancer Control Programme). We should create awareness among public about physical activities, avoiding obesities, healthy dietary practices, reducing occupational and environmental exposures, reducing alcohol uses, immunization against hepatitis B virus and safe sexual practices for avoiding cancer genesis.(NOT CONFORMED)

The fact that only 5–10% of all cancer cases are due to genetic defects and that the remaining 90–95% are due to environment and lifestyle provides major opportunities for preventing cancer. In prevention of cancer, (Preetha A, 2008) there is better and safe way, i.e. Diagnosis and Treatment and Healthy Diet for all cancer.

- Lose weight if you are overweight. Obesity is strongly linked to breast cancer in older women and cancers of the endometrium, kidney, colon, and esophagus.
- Exercise regularly, at least 30 minutes per day for most days of the week. There is strong evidence that exercise by itself reduces the risk of colon and breast cancer. Risk is decreased the most among very active people.
- Avoid high-calorie, high-fat food. The chief causes of obesity are a lack of physical activity and eating too much high-calorie food.
- Avoid consuming large amounts of red and preserved meats, salt, and salt-preserved foods. These may increase the risk of colorectal and stomach cancers.
- Eat a daily diet that includes a variety of foods from plant sources, such as fresh fruits, vegetables, whole grains, and whole grain breads and cereals. Fruits and vegetables contain substances (e.g., antioxidants) that help defend against toxic agents and disease.
- Drink alcohol in moderation, if at all, especially if you smoke. (One or two alcoholic drinks a day is considered moderate.) Heavy drinking is linked to cancers of the mouth, throat, esophagus, voice box, liver, and breast.
- Avoid too much sunlight, particularly if you are fair skinned, by avoiding sun exposure at midday (10 a.m.–4 p.m., when sun exposure is strongest), wearing protective clothing, and using sunscreen. Many of the more than one million skin cancers diagnosed every year can be prevented by protection from the sun's rays. Avoid tanning beds and other artificial sun or UV exposure.
- Avoid viral or bacterial infections.

V. Treatment

Breast cancer can be detected at earlier stages by simple breast examination, maximum (>90%) cases are diagnosed in advance stages i.e. stage II, III and stage IV (Meshram et al., 2009). In Africa and Asia the treatment of breast cancer in stages I, II or III costs less than U$ 390 per Disability Adjusted Life Years (DALY) averted. If the cancer progresses to stage IV treatment will cost more than 3,500U$ per DALY averted (Groot et al., 2006). Breast cancer treatment in India varies from nonexistent, to the most updated at power with the developed world.

For treatment of breast cancer, following options are available

1. Breast conserving surgery
2. Mastectomy
3. Chemotherapy
4. Radiation theory

A plan for the diagnosis and treatment of cancer is a key component of any overall cancer control plan. Its main goal is to cure cancer patients or prolong their life considerably, ensuring a good quality of life (Cancer Control knowledge into actions WHO Guide for Effective Programmes, 2008)

VI. Diet

Cancer is caused by both internal factors (such as inherited mutations, hormones, and immune conditions) and environmental/acquired factors (such as tobacco, diet, radiation, and infectious organisms). The link between diet and cancer is revealed by the large variation in rates of specific cancers in various countries and by the observed changes in the incidence of cancer in migrating. The protective role of fruits and vegetables against cancers that occur in various anatomical sites is now well supported (Divisi D.,2006 and vainio h.,2006)

The role of diet takes special importance in countries like India, which are fast moving towards industrialization and westernization. We had a predominantly plant based diet and with the advent of western life style we are moving towards a diet rich in animal proteins. This coupled with other habits like smoking and

alcohol will lead to increase in the chronic disease burden especially cancer and cardiovascular diseases. Prompt action has to be taken to spread the message of healthy life style and dietary practices. (Cherian Varghese)

VII. Interventions For The Future

1) Government agencies, non government organizations and the media can play a major role in increasing awareness about breast cancer among the general public. If local celebrities can be involved to promote the cause it will further strengthen the awareness activities.
2) Women in late thirties should be the target for the purpose of screening in India as breast cancer is occurring in younger age group over here.
3) Guidelines for breast cancer management have been developed for the developed countries.India is a limited resource country and within the country also there are many cultural, social and health infrastructure differences therefore we should form our own management guidelines which are feasible and practical.
4) 4)Regulation of the cost of chemotherapy drugs by the regulatory agencies is of utmost relevance in providing complete treatment to the patients.
5) Research into genetic makeup of breast cancer in India is limited. If undertaken it may help us understand the early onset of breast cancer in India.
6) Mobile mammography units to target women in the interior of the country, villages, hilly areas etc.(Khokhar A, 2012)

VIII. Conclusion

The increasing number of cancer patients every year in India. Various factors responsible for cancer genesis have been discussed, which need to be controlled for their eradication. India is a growing country playing a crucial role in the development of the whole world, and, hence, needs special attention on this issue. A multidisciplinary approach to cancer treatment is essential and this has to be made available at all Regional Cancer Centers. Cancer Control is an area in which we need participation from all sectors of the society.

1) We should create awareness among public about the cancer havoc and its prevention.
2) The different programs should be started by Government and NGOs for creating awareness among Indian public (Ali I. et al, 2011), for which India has formulated a National Cancer Control Programmed. The programmed envisages control of tobacco related cancers; early diagnosis and treatment of uterine cervical cancer; and distribution of therapy services, pain relief and palliative care through augmentation of health infrastructure.
3) The diet and living style are important factors to control the spreading of cancers and, hence, Indians should be careful about these facts. (Ali I. et al, 2011)
4) Primary prevention is the most cost effective prevention program as it aims to reduce the incidence of cancer by risk factor modification. (Cherian Varghese)
5) Mammographic screening for breast cancer may not be cost effective in India at present, but regular breast self examination needs to be promoted for early detection of breast cancer(Cherian Varghese)
6) Fifty percent of all cancers in males are tobacco related and a large proportion of them can be prevented by anti-tobacco programs. (Cherian Varghese)
7) Teen age students need to be targeted as most of them pick up habits at this time. The school curricula should involve messages for a healthy life style and warn about the harmful effects of tobacco and alcohol.
8) (Cherian Varghese)

For Cancer control many organizations are working, funding for cancer agencies.

1) Some commentators regard the approval of the first therapeutic cancer vaccine by the Food and Drug Administration (FDA) of the U.S.A. as clinical proof-of concept for therapeutic vaccines. They have hailed this approval stating that immunotherapy has earned its spot in the ranks of cancer therapy (Pardoll D and Drake C, 2012).
2) Classical vaccine technology holds the golden rule that vaccines should be applied in the prophylactic setting, *i.e.* prior inoculation with the pathogen. This is why children, but not diseased people, are vaccinated against bacterial and viral pathogens to prevent the development of disease. Prophylactic vaccination also yields good protection against infection with tumourigenic viruses.(sande van der et al 2007,Gissmann L et al 2009, Stanley M, 2010)
3) The most recent set of estimates for 2002, have now been updated to 2008 using new sources of data and improved methods of estimation. In this article, we provide a summary of the results for 27 major cancers and for all cancers combined, in 20 world regions and for more and less developed regions, as defined by the United Nations. (un , population division 11,3)
4) International Association for the Study of Lung Cancer (IASLC).

5) World Cancer Research Fund International (WCRFI).
6) National Institute for Health and Care Excellence (NICE).
7) National Comprehensive Cancer Network (NCCN)

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