MANAGEMENT OF BREAST CANCER IN SRI LANKA

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Abstract

Cancer, a complex and devastating disease, poses a major global health challenge, affecting millions of lives each year.
Sri Lanka, a vibrant island nation in South Asia, is no exception to this widespread cancer rate.
Cancer management in Sri Lanka requires a comprehensive understanding of the burden, prevalence, and efforts made to combat the disease.
This article delves into the current state of cancer in Sri Lanka, looking at prevalence and incidence, availability of screening and early detection programs, different treatment modalities, challenges knowledge faced in cancer management, government initiatives, and policies, the importance of supportive care and rehabilitation, as well as future directions and advances in cancer management.
By exploring these aspects, we can better understand the efforts and strategies used to manage cancer in Sri Lanka and lay the foundation for improved cancer care and control in this country. Here, research will be carried out primarily in collaboration with the Sri Lankan Ministry of Health, the Sri Lankan oncological Department, the Sri Lankan National Hospital for Cancers, and the Office of the Ministry of Health. As Sri Lanka is a third-world developing country, treatment options for cancer patients are very limited. I intend to expand medical services in Sri Lanka's cancer hospitals. Therefore, we can educate society about preventive medicine as a preventive measure. Frequent screening tests should be performed, especially for people in risk categories. This research work focused on preventive health measures and improvements in breast cancer medical unit facilities and treatment units.

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1. Project definition

I propose to develop a breast cancer prevention and control project in Sri Lanka.
My main objectives are to reduce the incidence of breast cancer in Sri Lanka, reduce deaths due to breast cancer, and improve the facilities at the oncological centers in Sri Lanka.

2. Final Project Summary

My main goal is to improve breast cancer prevention in Sri Lanka.
Therefore, procedures such as annual cancer screening should be performed according to the methods recommended by the WHO.
We also need to inform society and reduce risk factors.
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3.Updated research summary

Breast cancer is the most common cancer among the women in Sri Lanka. In 2010, the incidence of breast cancer in Sri Lankan females was 24.7 per 100,000 age-standardized population, making it the most frequent cancer among them. More than 3000 new cases of breast cancer are diagnosed each year, according to analysis of the Sri Lanka National Cancer Registry. Breast cancer survival rates in Sri Lanka are comparatively low when compared to more developed nations, presumably as a result of a number of factors, such as accessibility issues and delays in diagnosis and treatment.

The primary healthcare system in Sri Lanka is supported by the government and offers free healthcare to all of its residents. Despite the existence of a private health system in the nation, the public health system handles the diagnosis and treatment of the great majority of cancer patients, which places a significant strain on it. Over the past two to three decades, cancer care pathways and services have grown in the public and commercial sectors, with notable advancements in the types of treatment offered and the number of people treated.

Globally, there have been recent shifts in the incidence and mortality of breast cancer, with industrialized and developing nations exhibiting relatively different trends. Globally, the incidence of breast cancer has been rising, primarily because of the sharp rise in incidence in emerging nations, while incidence rates in wealthy nations have either plateaued or declined. Similar to this, early diagnosis and therapeutic advances have led to a significant drop in death rates in affluent nations, but death rates are continuously rising in emerging nations, notably those in South Asia. Programs for population-based mammography screening have helped lead to early diagnoses and may have increased rates in some nations as a result of overdiagnosis.

Population-based screening programs in affluent nations seem to have significantly decreased mortality from breast cancer due to early identification, notwithstanding some debate. On the other hand, because more subclinical diseases are being diagnosed as a result, the incidence of breast cancer has significantly increased. Sri Lanka is one of many developing nations without a national breast cancer screening program. Sri Lankan women can have clinical breast exams in community-based "well women clinics," however the procedure is still not widely used. This could be the reason why, in comparison to industrialized countries, a substantially higher percentage of breast cancer cases are discovered at an advanced stage.

While there have been few studies evaluating the histological patterns, those that have identified higher grade neoplasms and a greater percentage of triple-negative breast cancers (30–40%) among breast cancer patients in Sri Lanka are comparable to those in other developing Asian nations. There are very few studies on breast cancer treatment patterns that take guidelines into account. To create efficient plans that enhance the standard of care and outcomes for patients with breast cancer, data about the disease's features and treatment trends are crucial. The goal of the current study was to characterize the clinical features and treatment trends in a sizable cohort of modern Sri Lankan breast cancer patients. In order to assess compliance with the suggestions of standard guidelines, we also attempted to comprehend treatment patterns.

Objectives

Objective 1 – **Enhance knowledge about prevention of cancers by reducing the risk factors in the lifestyle.**

Objective 2 – **enhance knowledge of early detection and screening of cancers**

Objective 3 - **ensure equality of receiving proper investigation methods and treatment methods**

Goal 4 – **ensure the suffering patients get the proper rehabilitation and palliative care**

Goal 5 – **ensure the establishment of the proper cancer control program and receiving the outcome and prognosis of the program.**

Methodology

Objective 1: Enhance knowledge about prevention of cancers by reducing the risk factors in the lifestyle.

When we discuss risk factor reduction, the risk factors stated are environmental, biological, genetic, and behavioral.

All of these mentioned types of risk factors influence the development of melanoma to a degree specific to the type of melanoma.

As we all know, prevention is better than cure, this also applies here.

Modifiable and non-modifiable risk factors.

Therefore, if there is a risk factor to be added to the list of modifiable factors, it is better to minimize that factor than ever before to reduce the incidence of malignancy.

30% of all cancers are preventable.

Environmental risk factors are the exposure of different types of carcinogens which can be physical (radiation or heat), chemical liquids or gases, biological agents such as bacteria, viruses, fungi and protozoa.

Biological risk factors include gender, age group and body development.

Abnormalities in the genetic component are related to genetic risk factors and behavioral risk factors such as smoking, alcohol and illegal drug use, and a diet harmful to the living environment.

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Develop a health recommendation for cancer control among the community. (schools, universities, other educational institutions, hospitals, workplaces, villages)

decrease incidence of preventable cancers related with behavioral risk factors (alcohol, tobacco smoking, unhealthy diet, betel chewing)

objective 2- enhance knowledge of early detection and screening of cancers

Early detection of cancer is extremely beneficial to the cancer management plan.

Additionally, it leads to increased survival rates associated with carcinoma.

Because some malignancies are preventable, screening methods are essential in these cases.

The screening procedure is performed for patients who do not have any symptoms.

Early diagnosis targets patients who have symptoms but are in the early stages of their cancer and have not progressed.

The cost, effectiveness, and aggressiveness of treatment are reduced when early diagnostic procedures are available.

objective 3- ensure equality of receiving proper investigation methods and treatment

methods

As mentioned above, screening procedures and early detection of malignant tumors are beneficial, but the results must point towards an effective treatment plan.

Confirming the diagnosis is equally important in this topic.

Diagnosis is not only the process of detecting the presence of cancer but also involves identifying complications caused by the disease and evaluating the adequacy of the treatment plan.

Effective diagnosis as well as effective treatment planning are greatly affected in this field.

Management is primarily aimed at increasing survival, prolonging life, and improving quality of life.

The problem in this case is that Sri Lanka is a developing country so one can see the difference in facilities between urban, suburban and rural provinces.

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objective 4-ensure the suffering patients get the proper rehabilitation and palliative care

Palliative care is also essential when it comes to cancer.
When there are cancers that cannot be cured and the cancer is diagnosed at a late or advanced stage, it is better to provide palliative care rather than curative management procedures.
Because it will not help the patient's survival.
In these cases, implementing appropriate palliative care and rehabilitation to improve quality of life is the best option.
In Sri Lanka there are no palliative care facilities and appropriate rehabilitation protocols for cancer patients.
Therefore, it is more important to consider this aspect in this topic.

objective 5- ensure the establishment of the proper cancer control program and receiving

the outcome and prognosis of the program.

Even if we have developed a program or plan to manage the management of cancer patients, it is essential to regularly monitor activities and adapt what needs to be changed in other cases.
together.
Therefore, establishing an appropriate cancer care surveillance system would be beneficial to achieve cancer prevention and control goals in the country.
We need to collect information on every cancer patient in the country and study their prognosis.
Patients should be included in an appropriate database system to monitor and implement their situation.
This needs to be done not only in urban areas or the capital, but this system also needs to be replicated throughout the country.

From January 1, 2016, to December 31, 2020, all women with newly diagnosed invasive primary breast cancers were found using the National Cancer Institute of Sri Lanka (NCISL) breast cancer registry. All breast cancers treated at the NCISL starting in 2016 are included in the prospectively maintained database known as the NCISL breast cancer registry. Around 40% of all cancer patients in Sri Lanka receive treatment at the NCISL, the country's largest hospital exclusively dedicated to treating cancer patients. Information about creating the database, gathering data, and validating it can be found elsewhere.

Every patient who visits the NCISL provides detailed information about their demographics, how they sought care, their cancer treatment, and their follow-up. We retrospectively gathered data on all newly diagnosed patients identified in 2016 and 2017, having started prospective data gathering in 2018. Information on some of the patients who should have been admitted to the hospital but passed away later was unavailable at the time the data was entered because of the retrospective data collection that took place in 2016 and 2017. According to NCISL records, the expected number of patients was less than 300. Most of these individuals most likely had advanced disease when they first appeared.

Statistical analysis

5181 women who received a new breast cancer diagnosis during the five years from January 1, 2016, to December 31, 2020, were included in this study. Table 1 displays the distribution of patient and tumor characteristics within the study population. The women's ages ranged from 21 to 93 years old, with a mean age of 56 [standard deviation (SD) = 12]. The age range of 50–59 had the highest percentage of breast cancer diagnoses (28%). For 2944 patients, or 57%, BMI information was available. Out of them, 48% (n = 1424) were either obese (14%), or overweight (34%). Sixty-seven percent were postmenopausal. The Charlson score comprised co-morbidities for 1387 individuals, or 27% of the total. Patients with Charlson scores of 1 (four percent) and > 1 (twenty-one percent) were found. The co-morbidities that were most frequently found were hypertension (n = 1566, 30%),

Characteristic	Number of patients (%)
Age category	
< 40	429 (9)
40–49	1252 (24)
50–59	1464 (28)
60–69	1359 (26)

Characteristic	Number of patients (%)
70+	677 (13)
Year of diagnosis	
2016	973 (19)
2017	1110 (21)
2018	1198 (23)
2019	1064 (21)
2020	836 (16)
T stage	
T1	1029 (20)
T2	2909 (56)
T3	619 (12)
T4	619 (12)
Missing	5 (<1)
N stage	
N0	2456 (48)
N1	1700 (33)
N2	693 (13)
N3	327 (6)
Missing	5 (<0.1)
M stage	
M0	4915 (95)
M1	266 (5)
Stage category[a]	
I	682 (13)
II	2746 (53)
III	1487 (29)
IV	266 (5)
BMI	
<18.5	124 (2)
18.5–24.9	1396 (27)
25–29.9	1009 (20)
>30	415 (8)
Missing	2237 (43)
Charlson score	
0	3794 (73)
1	1212 (23)
>1	175 (4)

Characteristic	Number of patients (%)
Histology type	
Ductal CA	4436 (86)
Lobular CA	222 (4)
Mucinous CA	102 (2)
Papillary CA	56 (1)
Metaplastic CA	30 (1)
Other	87 (2)
Missing	248 (5)
Grade	
I	710 (14)
II	2316 (45)
III	1586 (31)
Missing	569 (11)
LVI	
Positive	1189 (23)
Negative	3554 (69)
Missing	438 (8)
ER/PR status	
Positive	3180 (61)
Negative	1230 (24)
Missing	771 (15)
HER-2 status	
Positive	947 (19)
Negative	3129 (60)
Equivocal	302 (6)
Missing	803 (15)
Subtype	
Luminal A	2362 (46)
Luminal B	555 (11)
HER-2 enriched	392 (8)
Triple negative	841 (16)
Missing	1041 (20)
Menopausal Status	
Peri	364 (7)
Pre	884 (17)
Post	3450 (67)
Unknown	483 (9)

Table 1 - Demographic and tumor characteristics of women with breast cancer diagnosed during 2016–2020 at the National Cancer Institute, Sri Lanka

1. $n = 5181$ unless otherwise specified
2. [a]Stage category defined by pathological staging except for neoadjuvant treatments and metastatic disease which were defined by the clinical stage
3. *LVI* Lymphovascular invasion

At the time of diagnosis, around two thirds (66%) of the malignancies were in stages I and II (early stages) (Table 1). The percentage of cases of early breast cancer varied depending on age group, with 66% occurring in the 50–59 age group and 65% in the ≥70 age group.

Ductal carcinomas accounted for around 90% of the malignancies, with lobular (4%) and mucinous (2%), in second and third place, respectively. Only 15% of the malignancies were grade I, with grade II tumors accounting for about half of the cases. The positive rate for HER-2 was 22% and for ER/PR was 72%. Tumor subtype analysis was performed on the patients for whom data on all biological and receptor features were available. Of those, 20% were triple negative tumors and 57% were luminal A type malignancies.

Table 2 displays the treatment characteristics of the women who were part of the analysis. Regarding breast surgery, 66% of the women had had a mastectomy, either with or without reconstruction, as their main procedure. When patients were divided into early (stage I+II) and advanced (stage III+IV) groups, more advanced patients (73%) than early-stage patients (62%), had mastectomy with or without reconstruction. Sixty-eight percent of patients who underwent axillary surgery received axillary clearing as the surgical procedure for axillary lymph nodes. Similar to mastectomy figures, a larger percentage of advanced-stage patients had axillary clearance (77%) than early-stage patients (63).

Type of treatment	Early (%)	Advanced (%)	Total n (%)
Surgery – Breast			

Type of treatment	Early (%)	Advanced (%)	Total n (%)
Mastectomy only	2101 (61)	1271 (73)	3372 (65)
Mastectomy + reconstruction	32 (1)	9 (1)	41 (1)
Wide local excision	1107 (32)	154 (9)	1261 (24)
No surgery	187 (6)	315 (18)	502 (10)
Missing	1 (< 1)	4 (< 1)	5 (< 1)
Surgery – Axillary			
Sentinel LN biopsy	1034 (30)	78 (4)	1112 (22)
Axillary clearance	2174 (63)	1344 (77)	3518 (68)
No axillary surgery	219 (6)	326 (19)	545 (10)
Missing	1 (< 0.1)	5 (< 1)	6 (< 1)
Neoadjuvant chemotherapy			
Yes	126 (4)	478 (27)	604 (12)
No	3302 (96)	1275 (73)	4577 (88)
Adjuvant chemotherapy			n = 4270
Yes	1888 (67)	994 (68)	2882 (68)
No	915 (33)	473 (32)	1388 (32)
Adjuvant radiotherapy			n = 4270
Yes	1578 (56)	996 (68)	2574 (50)
No	1221 (43)	475 (32)	1696 (33)
Adjuvant endocrine therapy			n = 4266
Yes	1833 (65)	847 (58)	2680 (52)
No	964 (35)	622 (42)	1586 (31)

Table 2 - Treatment characteristics of women with breast cancer diagnosed during 2016–2020 at the National Cancer Institute, Sri Lanka

Treatment options for the cancer

1. **Surgical treatment**

Surgery plays an important role in cancer treatment, aiming to remove cancerous tumors and affected tissues.
There are many different types of cancer surgery, from curative to palliative.
Curative surgery aims to completely remove the cancer, while palliative surgery focuses on relieving symptoms and improving quality of life.
Surgical procedures may include open surgery or minimally invasive techniques, such as laparoscopy or robot-assisted surgery.

Preoperative and postoperative care

Before and after surgery, proper preparation and care are essential.
Preoperative care may include medical evaluation, anesthesia consultation, and ensuring that the patient is physically and mentally ready for the procedure.
Postoperative care includes monitoring for any complications, controlling pain, and supporting recovery.
Rehabilitation and follow-up care are also important to optimize long-term results.
Remember, controlling cancer is a complex journey, but with early detection, appropriate treatment, and a supportive care team, the fight against cancer becomes more manageable.
Stay informed, stay proactive, and never underestimate the power of hope and resilience.

2. Radiation therapy and chemotherapy

Radiation therapy, also known as radiotherapy, is a treatment that uses high-energy radiation to target and kill cancer cells.

The basic principle is to apply radiation to specific areas of the body affected by cancer, while minimizing damage to healthy cells.

It works by damaging the DNA of cancer cells, preventing them from multiplying and ultimately leading to their death.

Types of radiation therapy

There are different types of radiation therapy used in cancer management.
External radiation therapy involves directing radiation from an external device at the tumor.
On the other hand, internal radiotherapy, also known as brachytherapy, involves placing a radioactive source close to the tumor.
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Chemotherapy agents and delivery methods

Chemotherapy is a systemic treatment that uses drugs to kill cancer cells throughout the body.
These medications can be taken orally, injected, or intravenously.
Chemotherapy can be given before surgery to shrink the tumor, after surgery to destroy remaining cancer cells, or combined with radiotherapy to improve effectiveness.

3. Targeted Therapy and Immunotherapy

Targeted therapies are a new group of cancer treatments that focus on specific molecules or pathways involved in cancer development.

Unlike chemotherapy, which affects both cancer cells and healthy cells, targeted therapy has the advantage of selectively targeting cancer cells, leading to fewer side effects.

These therapies may include small molecules or monoclonal antibodies that interfere with specific proteins involved in cancer.

Immunotherapy approaches Immunotherapy harnesses the power of the immune system to fight cancer.

It works by stimulating the body's immune response to recognize and destroy cancer cells.

This can be achieved through immune checkpoint inhibitors, cancer vaccines or adoptive cell transfer.

Immunotherapy has shown promising results in many types of cancer and has revolutionized the field of cancer treatment.

Combination therapy In some cases, combining different treatments, such as targeted therapy with immunotherapy or chemotherapy with radiation therapy, may produce results.

4. Palliative care and support services

The role of palliative care in cancer management Palliative care plays an important role in cancer control, with a focus on quality improvement the lives of patients and their families.
It aims to treat physical, emotional, and psychosocial symptoms related to cancer and its treatments.
Palliative care can be provided alongside curative treatments and can be started at any stage of the disease psychological support for cancer patients Cancer can leaving adverse consequences not only on the body but also on the patient's health and spirit.

Psychosocial support services for cancer patients

such as counseling, support groups, and therapy, are valuable resources for cancer patients to cope with the emotional challenges they face.
These services provide patients with a safe space where they can share experiences, receive advice and find solace in the company of others going through similar journeys

5. Future Directions and Advances in Cancer Management Emerging Technologies and Innovations This field Cancer Management is constantly evolving, with new technologies and innovations on the horizon.
From precision medicine and liquid biopsies to advanced imaging techniques and robotic surgery, these advances promise more accurate diagnoses, personalized treatment plans and better outcomes for cancer patients.

Project Analysis, evaluation, and recommendation

Project analysis

In this project, we discuss the prevention and control management of this major problem.
Here, in this project, there will be an extensive program undertaken with health-related and non-health-related experts to achieve the ultimate goals.
As noted above, starting with the assessment of risk factors and the creation of a database with a cancer control surveillance system, this will proceed along a leading pathway.
Therefore, it is necessary to contact the administrative officer of the oncology unit in Colombo (Apeksha Hospital).

- Week 2: I will complete my project's goals, objectives, scope, and design;

- Weeks 3–7: I will do analytical research; and

- Week 8: I will make a decision. Set up meetings with the Sri Lanka National Cancer Center's (Apeksha Hospital) administrative staff.

- In Week 9, I will have meetings with the Sri Lanka Epidemiology Unit.

- Week 10: Set up meetings with Sri Lankan non-governmental organizations (Rotary Club, ASACA)

- Week 11: Talks with the Ministry of Education to provide details to the curriculum about cancer;

- Weeks 12-14: Development Create a financial plan for the diagnostic and screening processes.

- Weeks 15- 17: carry out the domestic project;

- Week 18: get input and monitor outcomes

Evaluation

We must first evaluate this program's performance before launching it.

1) Information from every cancer care unit must be gathered in order to determine whether their share is average or below the goal that has been established.
It is necessary to gather data from all provinces in order to assess facility allocation equity.

2) Gather data from the community, businesses, educational institutions, and schools to determine whether the initiative is heading in the right direction or not. 3) Calculate the project's outcomes using Gather data on the incidence, mortality, morbidity, and survival rates of cancer.

Recommendation

Programs for cancer screening should be recommended to all patients with noncommunicable disorders.
keeping an eye on cancer patients receiving treatment.
Modifications to household drinking and smoking regulations
There should be deadlines associated with the establishment of nationwide breast cancer screening programs.

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