Chapter 3

Problem Definition

This chapter describes the field of this research and presents the problems on which it is based. The brief scope of the research provides an opportunity for building a simplified solution through addressing all the problems defined.

Breast and Cervical cancer is the leading cancer among women and considered to be one of the most common causes of death globally. Breast cancer is considered to be the second largest cause of death in India. It constitutes about 19-34% of total cancer cases in the country. The estimated incidence rate of breast cancer in India is 1.3 million annually \cite{3, 4}. Death by cervical cancer in India accounts for nearly one-third i.e. 26% of global cervical cancer deaths. It is considered to be the third largest cause of death globally; accounting for nearly 10% of all cancer deaths. According to IARC estimates, mortality from cervical cancer is expected to witness a 79% increase from 74,118 deaths in 2002 to 132,745 deaths by 2025 in India \cite{5}. These statistics indicate the urgency for immediate attention to cancer control and prevention measures and provision of quality health services to the cancer patient.

Cancer care is always considered to be a most challenging task for the
oncologist and always requires quality clinical decision making in the care and evaluation of cancer patient.

### 3.1 Problem Definition

Clinical decision making highly depends on the instant access to clinical knowledge and relevant patient information during the patient encounter in achieving quality healthcare. Nonavailability or delay in receiving these the necessary information leads to medical error, harm and suffering to the patient.

Clinical decision support system (CDSS) is considered to be a vital component in the field of healthcare and clinical knowledge management for the clinical process in diagnosing and investigating the patient condition in long term care. The literature survey showed that the existing clinical decision support system in practice satisfied the user so far as access of information and clinical knowledge was considered but there are certain issues that need to be defined in making the system more acceptable and sustainable into the present healthcare delivery system and scenario.

Based on the literature survey and feedback received from Oncologists, it can be inferred that the cancer care requires a patient to visit the healthcare facility on a regular and scheduled basis for receiving the continuity of care in terms of surgery, radiotherapy, hormonal therapy, chemotherapy etc. A large amount of data is getting generated during these processes and helps the Oncologist in quality decision making. A healthcare facility without an electronic system for managing these large datasets impedes the objective of improving quality care and services.

Promptness in delivering patient care is considered as one of the most important factor in assessing the quality of services offered and provided by the
healthcare setup. In cancer care, an Oncologist always expects that whenever the patients come for the follow-up visits, information about their healthcare status should be readily available with them for the immediate treatment, care and evaluation whereas its nonavailability leads to frustration, agitation and depression among the patients as well as the doctors and that affects the patient care and evaluation process. These issues were observed and marked during the survey of the oncologists.

During the process of treatment an Oncologist always looks for new research, practice guidelines and current events happening in the field of Oncology. It is evident from the feedback of the oncologist that they spend a long time in accessing and managing the domain knowledge for patient care, research and clinical trials. As a result they spend more time in searching for adequate and complete clinical knowledge and less time in providing patient care and carrying out other healthcare activities.

Cancer control and prevention is only possible when the information related to the population is available to the oncologist and the researchers. As per the National Cancer Registry Program (NCRP), hospitals with oncology services are required to submit a report based on International Classification of Disease in Oncology (ICD-O-3rd version) and TNM staging at regular intervals. It is very difficult to identify the population at risk if the hospital fails to provide this information to the Oncologist and agencies dedicated to provide healthcare services. Such a failure ultimately affects the objective of providing preventive, curative and palliative care to the population.

In cancer care, oncologists always come across a situation where the patients after the first few visits do not come for the follow-up and in many cases it is difficult to contact the patients whose follow-ups are due. This is due to the nonavailability of the electronic system where such types of patients can
be contacted easily.

Global online access of patients’ health information always assists the oncologist in planning a therapy during the patient encounter whenever and wherever it is required. The information systems in practice are mostly on window base platform that restrict the user to use the system within specific premises or locations in which they have the authority to access.

3.2 Scope of Research

The issues related to the current practice provided the scope of research where a single web application can be prescribed to the end user addressing all the issues with current practice and completely assist the oncologist with patient information and domain knowledge for quality decision making in breast and cervical cancer care where the access of the system can be anywhere within the hospital/clinic, at home, outreach areas or any part of the globe. The ultimate scope of this research is to completely support the oncologist but not to replace them with the system.