



## CANCER RISK ASSESSMENT: NEED, DEVELOPMENT AND IMPLICATIONS

### Oncology

Pragya Singh

Sr.Manager Projects at Dharamshila Cancer foundation, Delhi

### ABSTRACT

This paper attempts to explore the notion of risk, need of cancer risk assessment, understanding risk related terminologies, a view at the existing cancer risk assessment tools, and discuss the implications of such tools to nursing

### KEYWORDS

Cancer risk, Risk assessment tool, Cancer care

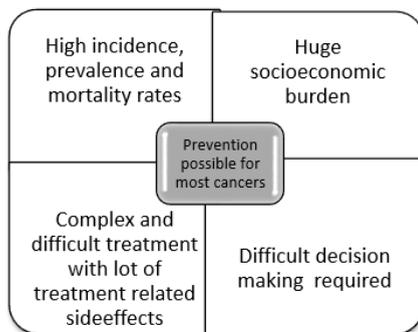
#### INTRODUCTION:

**CANCER** The word itself conjures up deep fears of a silent killer that creeps up on us without warning. Cancer, evokes such desperation that it has become a metaphor for grief and pain, a scourge straining our intellectual and emotional resources. With such being the incidence and prevalence of cancer, loss of productive manpower associated with it, and high cost of treatment there is a dire need for prevention and early detection of the disease. This leads to a current trend where a lot of researches focus on its risk factors and provides estimates of the chances for people developing cancer. Risk factors provide clinical information that can potentially be used to target screening and treatment. Identifying those who are at risk for developing cancer will help them to take prompt actions early. The newspapers<sup>1</sup> on 14<sup>th</sup> may 2013 were full of news of the famous Hollywood movie actress Angelina Jolie undergoing a bilateral mastectomy. All of a sudden there was an increased interest in the Risk assessment for cancer. Oncology experts labelled it as 'Angelina Effect'. It was the beginning of public interest in the concept of risk assessment for cancer. The concept of risk assessment is not new, and has been successfully applied to other specialties, but it has gained popularity and wide recognition in oncology over past few years.

#### Need for Cancer Risk Assessment

Risk assessment tools are based on data from large population studies and are designed to help the provider and patient examine the patient's personal risk factors, understand the impact of these risk factors on the disease, and identify ways to reduce the disease risk<sup>1</sup>No one talks about risk assessment for common cold although there is no one who hasn't ever got a cold in their lifetime. The main reasons which warrants risk assessment for cancer are depicted in figure I below:

Figure I: Need for cancer risk assessment



#### Understanding risk terminology:

The basic risk terminology includes<sup>2</sup> the following terms:

- **Risk:** Risk is a concept based on probability; it is the chance that the disease will occur.
- **Risk factor:** Characteristics associated with an increased risk of becoming diseased is called risk factor. Risk factors can be inherited, as a part of one's environment or even behavioural.
- **Exposure to a risk factor:** it means that a person before becoming ill has come in contact with a risk factor in question. Exposure can be a single or multiple contact.
- **Absolute risk:** It refers to the person's chances of developing a disease or disorder independent of any risk that other people may have for that disease or disorder.

- **Relative risk:** It refers to the ratio of the incidence, of a disease in an exposed group to the incidence of that disease in the unexposed group.

#### Development of a risk assessment tool

The following are the general steps one can follow while developing a risk assessment tool.

- **Identification of risk factors:** Each tool is based on certain risk factors, the more correctly the risk factors are identified the stronger would be the tool.
- **Incorporation of these factors to the new risk assessment tool:** user friendliness and target population must be kept in mind here.
- **Establishing construct validity and reliability:** this can be done by various statistical tests available
- **Testing the tool on unknown and known group of disease population:** this is a very important step as it will decide the usefulness of the tool.
- **Establishing calibration and discriminability of the tool:** As per various studies<sup>3</sup> determining how well a risk prediction tool works is determined by asking two questions: How accurately does the tool predict the proportion of different groups of people who will develop the disease? Also known as **Calibration** and how accurately does it identify individuals who will and will not develop the disease : Also known as **Discrimination**

#### Existing risk assessment tools for cancer

Several popular risk assessment tools exist for cancer example Breast Cancer Risk Assessment Tool (Gail Model)<sup>4</sup>, Cancer assessment tool by MD Anderson cancer Center<sup>5</sup>, University of Texas, Cancer risk assessment tool by National Cancer Institute (NCI) and the National Surgical Adjuvant Breast and Bowel Project (NSABP)<sup>6</sup>, Disease risk index by harward school of public health<sup>7</sup>.

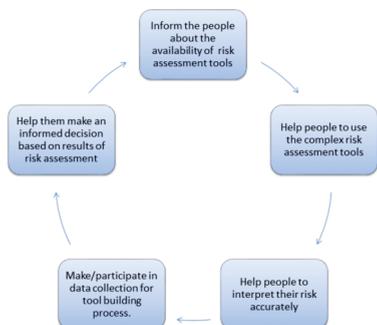
Every tool has its own advantage and drawbacks and assesses different risk factors while giving individualized predictions. For example Cancer risk assessment tool by National Cancer Institute (NCI) and the National Surgical Adjuvant Breast and Bowel Project (NSABP)<sup>6</sup> assesses the individuals chances of getting breast cancer based on: Age, Previous history of cancer, Family history of cancer, Menstrual history and Parity status. This tool Provides individualized risk for the user, gives a five year risk and lifetime risk for the person and explains the causes for increase or decrease in risk. But this tool is not useful for some women as it excludes women who have had a diagnosis of breast cancer, or benign breast diseases, exclude factors like previous radiation therapy to the chest, women who have recently immigrated to the United States or women who live outside US. So every tool need to be carefully understood before it is used.

#### Implications of risk assessment tools to healthcare:

When we talk about individual risk we utilize probabilities and refer to the chance that an event will occur, based on the experiences of groups of similar individuals. For example if we see that the risk of a particular cancer in a specific population is 20%, then we can predict with some accuracy that 20% of people in a similar group will have that particular cancer. We cannot however determine with certainty which individuals in that group will be affected. Because every person is unique and complex, one can never predict exactly what will or will not happen to an individual. What we can do is use scientific research to learn about factors that affect disease risk and to identify opportunities to increase the chance of living long and healthy life<sup>7</sup>.

Although some people who may have risk factors may remain free of disease, others without significant risk factors may develop the disease. Because most chronic disease are caused by several relatively weak risk factors acting together, statistically combining their effects can produce a more powerful prediction of risk than considering one risk factor at a time. Statistically combining risk factors produces a risk prediction model or risk prediction tool. Risk prediction model help in risk stratification and are often used to predict the future for individuals, with the hope that each person will know his or her own risks, a hope summarized by the word 'personalized medicine'<sup>14</sup>.

**Figure 2: Role of health provider in terms of risk assessment for cancer**



### CONCLUSION:

Risk assessment tools have a great utility especially in diseases like cancer where prevention is important and early detection can improve disease outcomes to a great extent. Although a lot of risk assessment tools already exist they need to be tested in different settings and updated on a regular basis. In short it can be summarized that risk assessment is a concept that needs to be applied in oncology to empower the patients, facilitate decision making and reduce the burden of cancer but at the same time their interpretation and drawbacks need to be kept in mind. Also with the availability of so many tools to assess their risk people are often perplexed as to which tool to use and how to interpret its results. Regarding this Canadian breast cancer foundation<sup>18</sup> warns people about choosing the tools available. It says that if you use an online breast cancer risk assessment tool, please consider the following:

- Use a tool that has been developed by a credible and trustworthy source (e.g. a recognized research body, academic institution, health charity or government).
- The tool should provide you with information about how it was developed and its benefits and limitations, including what it can tell you about breast cancer risk and what it cannot tell you. Look for this information and read it before you use the tool. This can help you to better understand the tool and its results.
- Base your health decision-making on information from different, credible sources and consider using what you've learned to inform a conversation with a health care provider.

### Authors profile:

Mrs. Pragma Singh is a nursing post graduate from Manipal college of nursing and has done her graduation from CMC Vellore. She has around ten years of experience in teaching and training and has around 7 years of experience in oncology. Currently she is working with Dharamshila cancer foundation as Senior manager – Projects and looking after their preventive oncology programme.

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