**Breast cancer: myths, reality, and solution!**

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Cancer is one of the leading causes of death worldwide, with a recent study placing new cases at 18.1 million and ensuing deaths at 9.6 million. The global cancer burden profile is closely linked with lifestyle factors and the degree of socio-economic development. Even though Europe has less than 10% of the world’s population, over one-fifth of new cancer cases and nearly one-fourth of cancer deaths occur there. America also has a high cancer incidence of 21% but less mortality of 14.4%. However, although cancer incidence is only 5.8% in Africa, it causes many more deaths (7.3% in mortality). Nearly half of the new cancer cases and over half of the cancer deaths arise in Asia because of its large population. As the leading cause of cancer death in females and a non-negligible cause in males, the global burden of breast cancer is staggering, claiming 181,004 lives and resulting in 17.7 million disability-adjusted life years (DALYs). In both developed and developing countries, its incidence and mortality are still on the rise. In high/very high Human Development Index (HDI) regions, although the incidence age-standardized rate (ASR) of breast cancer is much higher than the low/medium HDI regions (54.4 per 100,000 vs. 31.3 per 100,000), the mortality ASR is lower in high/very high HDI regions than the low/medium HDI regions (11.6 per 100,000 vs. 14.9 per 100,000). Albeit an improvement is seen in the survival rate, it varies distinctly by region, owing to lack of early screening and detection and the adoption of advanced technology.

Breast cancer is the most common cancer in women, with almost 30 percent of cancers in women are breast cancers worldwide. Pakistan has the highest incidence of Breast Cancer in Asia. An estimate of 1 in 10 women may develop Breast Cancer in their lifetime. Cancer is not a death sentence, while breast cancer has become the commonest cancer in women of Pakistan, stating that roughly one in eight women will develop breast cancer in their life. Cancer screening and early diagnosis are the two methods that can reduce the number of deaths related to breast cancer. The breast cancer epidemic is noted globally, both in developed and developing countries. The growing population and increasing life expectancy are the two main reasons for the globally increased cancer burden. 82% of the world population lives in less developed countries where most cases will be emerging. Mortality due to cancer is higher in less developed countries even though cancer incidence is more significant in the advanced world. Breast cancer incidence and mortality have been increasing in regions of South America, Africa, and Asia. Various factors like dietary and lifestyle modifications (obesity, sedentary lifestyle) and lack of early detection facilities have been attributed.

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In Pakistan, according to Global Cancer Statistics, the incidence of breast cancer is reported to be 34,066 cases in 2018 compared to the last quoted figure of 34,038 cases in 2014. The number of deaths annually due to breast cancer is 17 158, whereas the number of deaths reported in 2014 by the World Health Organization (WHO) was 16,170. As per one of the articles published in the journal of Pakistan Medical Association (JPMA), the number of figures for newly diagnosed breast cancer cases per year was approx. 90,000 with 40,000 females losing their lives due to breast cancer. One of the reasons for the discrepancy in figures is likely to be linked to a lack of a well-organized population-based cancer registry-furthermore, unavailability of an effective National cancer control program.

Many people in developing countries like Pakistan are misguided by various kinds of alternate unscientific methods, which have decreased the proportion of early breast cancer detection. The delay in treatment led to advances in cancer stages that ultimately caused a challenge to treat the fatal disease. Moreover, 80 percent of women with breast cancer had no family history. Thus the risk for breast cancer increases with age, as about 77 percent of women with breast cancer are over age 50 at the time of diagnosis. The risk factors of breast cancer included women over the age of 40, early menarche, late menopause, late first-child, alcohol use, radiation, geographic location, diet, obesity, cancer in other breasts, family history, etc.

Besides the medical reasoning and cultural barriers in the early detection of breast cancer screening, another aspect that is still under-explored is technology usage. The public, especially in developing countries, is unaware of the artificial intelligence supported mobile applications and technologies for early breast cancer screening. One can detect breast cancer in time and start appropriate treatment. It is suggested that women under the age of 40 should carry out monthly self-examination, whereas women over 40 should get yearly mammography screening. These basics explain prevention may not be in our hands, although early detection is one’s key for a quality life.

Another up and coming aspect in cancer care is the usage of artificial intelligence (AI). This field is rapidly changing the landscape of diagnostics in medical imaging and prognostics, especially in breast and gastric cancers, in addition to reliable and non-solid tumors. AI also exhibits unprecedented and higher accuracy when compared to general statistical applications in oncology. In breast cancer diagnostics, artificial intelligence is a game-changer. In the United States, an AI system was devised, which led to an absolute reduction of 5.7% in false positives and 9.4% in false negatives when applied to screening mammography datasets. When juxtaposed with human readers, the AI system outperformed all of them, a staggering feat.

To conclude, despite breathing in the era of technology, Pakistan has not leapfrogged to catch up with the developed economies. There is a dire need for collaboration among health care professionals, economists, and data scientists to establish a trilateral network for proposing a practical solution to this rising problem. The tripartite system will seek medical practitioners’ medical assistance; an economist will act as an agent to model the socio-economic status, related micro and macro-economic factors, and design relevant health surveys and data scientists to provide hardcore assistance in enabling the artificial intelligence applications. Therefore, it suggested adopting technological support even at a basic level that would aid in significant positive change in improving ordinary individuals’ lives and access to medical facilities. After the outbreak of pandemic Covid-19, there is a need to develop technology health applications (supported by AI) that are accessible, cost-efficient, and user friendly that help in the early diagnosis of mild, moderate, and extreme diseases.

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