



Household Economic burden of Breast Cancer in Female Population



Authors:

Ms. Aymen Saeed

Dr. Ahsan ul Haq Satti

Co-Author: Dr. Fazli Hakim khattak

Household Economic Burden of Breast Cancer Disease in Female Population

By

¹Ms. Aymen Saeed ²Dr. Ahsan ul Haq Satti, ³Dr. Fazli Hakim khattak⁴Muhammad Imran Khan

Breast Cancer is the most common cancer affecting women with the estimated lifetime risk for 1 out of 8 women. About 1.3 million women are diagnosed worldwide yearly, with 465,000 deaths. Prevalence increases with age and affected both married unmarried women. The etiology of breast cancer is complex and can be determined through various indicative factors such as diet, genetics, chemicals and environmental factors. There are four main stages at diagnosis of breast cancer, which are usually defined according to the Tumor, Node, and Metastasis (TNM) system and these are further categorized into early (TNM stage group I and II), advanced (stage groups III and IV) and metastatic for the purpose of analysis. Breast cancer is the most frequent cancer among women, impacting 2.1 million women each year, and also causes the greatest number of cancer-related deaths among women. In 2018, it is estimated that 627,000 women died from breast cancer – that is approximately 15% of all cancer deaths among women.

The financial aspect of the disease is particularly sensitive in countries like Pakistan, where almost entire cost of the treatment is paid by the patient and the immediate family with little or no support from state or health insurance policies. Hence, the diagnosis of the cancer could be devastating news not only because of nature of the disease but also because of the continuous financial drain posed by the costs of the treatment.

To understand and estimate the Economic burden of breast cancer, this study is quite important for policy makers. The attention of government, policy makers and other investors must be drawn to the application of affordable and handy breast cancer care. Estimating the economic burden of this disease is a way to attain this goal.

This policy brief provides a general view of economic burden of breast cancer on the patient and his family which may inform government and policy makers. To the nuclear medicines the study will provide workable ground for the research in economics of nuclear medicines and treatment. The study is based on convenient sampling technique, where the respondents are female breast cancer patients taking treatment of breast cancer in selected public and private hospitals of Islamabad Rawalpindi.

The demographic characteristics are shown that in Pakistan breast cancer existing in all region but mainly in

Punjab followed by the other regions. Women with increasing age are affected more than in younger age.

Table No 4.1 Demographic Characteristics of Respondents

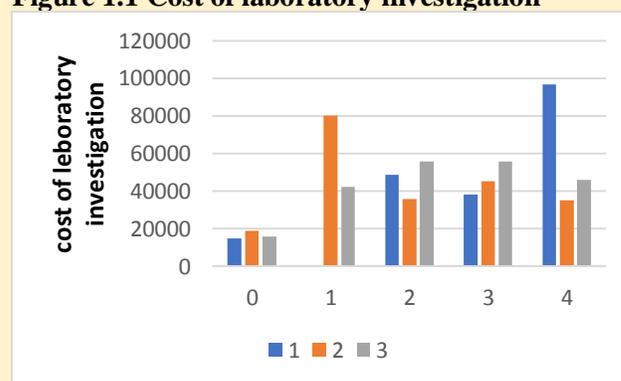
	Category	Percentage
Region	Punjab	65%
	KPK	4%
	Sindh	1%
	Baluchistan	1%
	AJK, GB	11%
	Islamabad	18%
Age Group	less than 30	11.6
	30-40	21.8
	Above 40	65.8
Marital Status	Married	79.6
	Single	7.6
	Widow	12.9
Education	Illiterate	42.67%
	Primary	12.89%
	Middle	16.89%
	Intermediate	17.78%
	Higher	9.78%

Breast cancer affected both married and unmarried as well as educated or uneducated.

Tangible Cost

The cost of illness technique is used to estimate the economic burden of breast cancer in female population. The respondents are receiving treatment for BC under a concerned facility with a specific cost.

Figure 1.1 Cost of laboratory investigation



The figure shows that laboratory investigation cost of patients below 25 years of age is highest at fourth stage of illness, the cost is high because of multiple investigations required for treatment. The patients of 30-40 years age group face highest cost of laboratory investigation at first stage of illness. The study results show, that cost of illness

¹ saeedaymen83@gmail.com

² ahsansatti@pide.org.pk

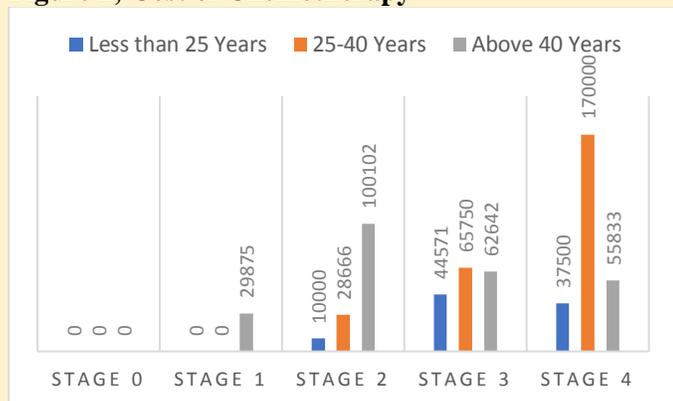
³ khattakh20@hotmail.com

⁴ Imran_14@pide.edu.pk

Household Economic Burden of Breast Cancer Disease in Female Population

for breast cancer patients sensitively varies across different age groups. At stage 3 the patients of all age groups face identical costs for laboratory investigation.

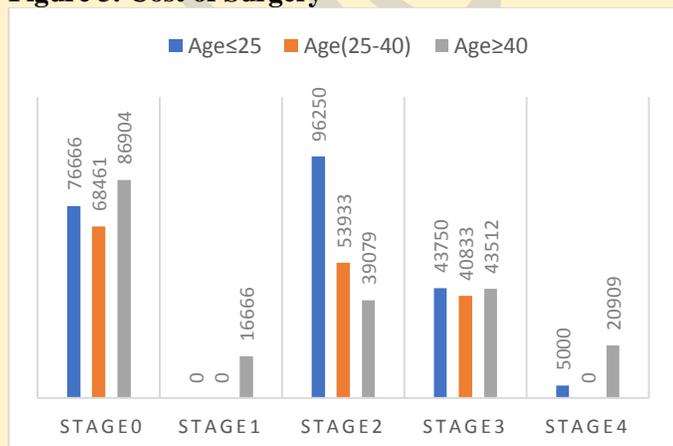
Figure 2; Cost of Chemotherapy



The study results indicate that the patients of stage zero and stage one, do not face any cost of Chemotherapy, excluding the patients above age limits 40 years at stage one, where the patients of same age group spend PKRs 29875 at once for Chemotherapy. For the zero-stage patient's chemotherapy is not required that's why the cost is zero at zero stage.

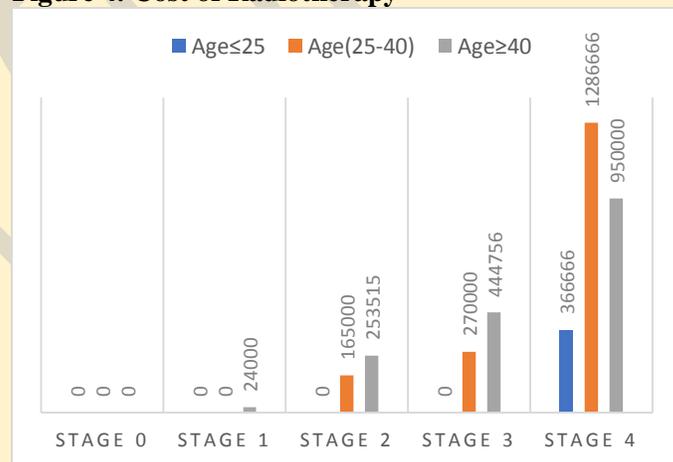
The average cost of illness for across all the groups for stage one is 21727 PKRs at once for Chemotherapy. However, the patients, below the age of 40 years do not need chemotherapy and thus the cost is zero at even stage first. Because the patients below 40 years of age, recover soon without the chemotherapy. The highest cost at stage second is faced by the patients of above 40 years, which indicates that at first stage the rate of recovery for the patients above age limit of 40 years is very low and the cost of second stage is thus the highest among all.

Figure 3. Cost of Surgery



The results in figure 3: show that highest surgery cost at stage first is faced by the patients of highest age group, which is above 40 years. The patients of lower age group are also facing significant cost for surgery at zero stage of illness. The cost of surgery at first stage of breast cancer is zero for both the age groups of below 25 and between 25 to 40 years of age. Only the patients of above 40 years age group are facing 16666PKRs for surgery at stage one. Some patients do not need surgery because of minor illness and the cost is connected to time period of illness. The patients below the age of 25 years are facing highest surgery cost at stage 2 and only 5000PKRs at stage 4. The grand total average cost of surgery for the patients of breast cancer, below the age of 25 years is 47115 PKRs only at once, which is second highest grand total cost for all the stages. The highest total grand cost surgery for all the stages is faced by the patients in the age group of 30-40 years.

Figure 4. Cost of Radiotherapy



The patients of stage zero and stage one, do not face any cost of radio Therapy, excluding the patients above age limits 40 years at stage one, where the patients of same age group spend PKRs 24000 at once for Radio therapy. The patients of same age group faced 253515.623PKRs at stage 2 ,444756PKRs for stage 3 and the highest cost paid for the same age group is 950000 at stage 4. For the zero-stage patient's radio therapy is not required. The patients lie between the age group of 25-40 years are facing 165000 costs at stage 2 ,270000PKRs at stage 3 and 1286666 at stage

Major Findings

Fear and lack of knowledge caused women to hide the breast lump from their husbands and families. On disclosure of breast cancer is potentially life threatening but may reflect the social stigma that is associated with a diagnosis of breast cancer. There is a social stigma of having a mastectomy in Pakistani culture. The breast

Household Economic Burden of Breast Cancer Disease in Female Population

cancer is viewed as a proscribed condition, which reduces the opportunities for unmarried women with breast cancer to later get married. In Pakistani society breast cancer is treated as a gender specific symbol of deprivation, which is not the case in rest of the world. Because of the awareness western societies do not face such kind of issues. Coping strategies also play important role in reducing the stress of patients temporarily but it is very dangerous for the health of patients. These types of cultural based treatments are very rarely effective. Most of the time, it increases the cost of health for patients. This study concluded that some of financial challenges women faced during treatment and care, like high cost of laboratory investigations, fees for treatment and costly travel expenses etc. Funding the cost of treatment and care for breast cancer can stretch people's budget to breaking point. Many of the hidden cost of breast cancer are not tangible but important. A woman who is diagnosed with breast cancer at a younger age (before she has started menopause) may face additional financial pressure. The travel from long distance for the treatment can also increase financial pressure. While women with early stage cancer will most likely know at the start of their treatment how long they will be engaged for their treatment (surgery, chemotherapy, radiotherapy) but women with last stages especially women with metastatic breast cancer don't have an "end point" to their treatment. Depending upon how their cancer responds to treatment, women with metastatic disease may have several "lines" of treatment, when one line of treatment stop working another treatment method is tried. it is difficult to predict how long each line of treatment may be given. What each line of treatment will be and how much it will cost the patient. All of these can tighten the household budget. Paying for cancer treatment and its associated costs pushes them to the brink of poverty. These families are forced to rely on government benefits, charity, borrow and sell off assets.

Policy Recommendation

The awareness programs shall be started by the government of Pakistan for prevention of disease. A program on any media should be introduced to direct the patients of BC to easily accessible treatment of cancer. This will reduce the treatment and lab investigation cost of the patients. Most of the expenses can be cut down through prevention with the help of constructing the screening test centers. Direct cost faced by breast cancer patients is quite significant. There is demand for a rational policy on breast cancer, treatment with the intention of supporting the direct cost components of breast cancer treatment for poor patients. This could be done through effective advocacy and collaboration with interest group

to elevate the required resources for reducing the direct treatment cost.

The study recommends the awareness programs, which shall focus on prevention of disease with parallel focus on interaction with patients for reduction of psychological issues, which will help in reduction of intangible cost of breast cancers patients. in addition, establishment of cancer hospital across the country and increasing the bed in the existing cancer treatment and diagnostic hospital shall be focused for investment in the government budget.

References

- Anderson, B. O., & Jakesz, R. (2008). Breast cancer issues in developing countries: an overview of the Breast Health Global Initiative. *World journal of surgery*, 32(12), 2578-2585.
- Aziz, Z., Sana, S., Akram, M., & Saeed, A. (2004). Socioeconomic Status and Breast Cancer Survival in Pakistani Women. *JOURNAL-PAKISTAN MEDICAL ASSOCIATION*, 54, 448-452.
- Banning, M., & Tanzeen, T. (2014). Living with advanced breast cancer: perceptions of Pakistani women on life expectations and fears. *Cancer nursing*, 37(1), E12-E18.
- Banning, M., Hassan, M., Hafeez, H., Faisal, S., & Zafar, A. (2009). 0200 The impact of culture, sociological and psychological issues on Muslim breast cancer patients in Pakistan. *The Breast*, 18, S69.
- Begum, N. (2018). Breast Cancer in Pakistan: A Looming Epidemic.
- Bhurgri, Y., Bhurgri, A., Nishter, S., Ahmed, A., Usman, A., Pervez, S., ... & Bhurgri, H. (2006).
- Brechin S, Bigrigg A., et al. Male and female sterilization. *Current Obstetrics & Gynecology*. 2006; 16:39-46.
- Coleman, M. P., Quaresma, M., Berrino, F., Lutz, J. M., De Angelis, R., Capocaccia, R., ... & Micheli, A. (2008). Cancer survival in five continents: a worldwide population-based study (CONCORD). *The lancet oncology*, 9(8), 730-756.
- Daniel, K. G., Chen, D., Orlu, S., Cui, Q. C., Miller, F. R., & Dou, Q. P. (2005). Clloquinol and pyrrolidine dithiocarbamate complex with

Household Economic Burden of Breast Cancer Disease in Female Population

copper to form proteasome inhibitors and apoptosis inducers in human breast cancer cells. *Breast Cancer Research*, 7(6), R897.

Daroudi, R., Sari, A. A., Nahvijou, A., Kalaghchi, B., Najafi, M., & Zendehtel, K. (2015). The economic burden of breast cancer in Iran. *Iranian journal of public health*, 44(9), 1225.

Davies, E. L. (2016). Breast cancer. *Medicine*, 44(1), 42-46. doi: 10.1016/j.mpmed.2015.10.002

Ferlay, J., Shin, H. R., Bray, F., Forman, D., Mathers, C., & Parkin, D. M. (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *International journal of cancer*, 127(12), 2893-2917.

Fryback, D. G., & Craig, B. M. (2004). Measuring economic outcomes of cancer. *JNCI Monographs*, 2004(33), 134-141.

Garrison Jr, L. P., Lubeck, D., Lalla, D., Paton, V., Dueck, A., & Perez, E. A. (2007). Cost-effectiveness analysis of trastuzumab in the adjuvant setting for treatment of HER2-positive breast cancer. *Cancer: Interdisciplinary International Journal of the American Cancer Society*, 110(3), 489-498.

Gyau, D. P. (2016). Economic Burden of Breast Cancer in Women: A Study at the Korle-Bu Teaching Hospital (Doctoral dissertation, University of Ghana)

Kedrowski, K. (2010). Women's Health Activism in Canada: The Cases of Breast Cancer and Breastfeeding. In *Canadian Political Science Association Meeting Montreal QC*

Kim, Y. A., Oh, I. H., Yoon, S. J., Kim, H. J., Seo, H. Y., Kim, E. J., ... & Jung, J. H. (2015). The economic burden of breast cancer in Korea from 2007-2010. *Cancer research and treatment: official journal of Korean Cancer Association*, 47(4), 583.

Kim, Y. A., Oh, I. H., Yoon, S. J., Kim, H. J., Seo, H. Y., Kim, E. J., . . . Jung, J. H. (2015). The Economic Burden of Breast Cancer in Korea from 2007-2010. *Cancer Res Treat*, 47(4), 583-590. doi: 10.4143/crt.2014.143

Lacey, J. V., Kreimer, A. R., Buys, S. S., Marcus, P. M., Chang, S. C., Leitzmann, M. F., ... & Hartge, P. (2009). Breast cancer

epidemiology according to recognized breast cancer risk factors in the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial Cohort. *BMC cancer*, 9(1), 84.

Mamo, G., Worku, A., Lemma, S., & Demas, T. (2017). Cost of Illness of Breast Cancer Patients on Chemotherapy in Addis Ababa Public Hospitals, the Case of Tikur Anbessa Specialized Teaching Hospital-Cross-Sectional Types of Study. *Health Econ Outcome Res Open Access*, 3(142), 2.

Meneses, K., Azuero, A., Hassey, L., McNees, P., & Pisu, M. (2012). Does economic burden influence quality of life in breast cancer survivors? *Gynecol Oncol*, 124(3), 437-443. doi: 10.1016/j.ygyno.2011.11.038

Pakistan-country profile of cancer and cancer control 1995-2004. *Journal of the Pakistan Medical Association*, 56(3), 124.

Rashidian, H., Daroudi, R., Ghasvand, R., Harirchi, I., & Zendehtel, K. (2013). Prevalence and Incidence of premenopausal and postmenopausal breast cancer in Iran in 2010. *Basic & Clinical Cancer Research*, 5(3), 2-10.

Seneviratne, S., Campbell, I., Scott, N., Shirley, R., Peni, T., & Lawrenson, R. (2014). Accuracy and completeness of the New Zealand Cancer Registry for staging of invasive breast cancer. *Cancer Epidemiol*, 38. doi: 10.1016/j.canep.2014.06.008 Seneviratne, S., Lawrenson, R., Harvey, V., Ramsaroop, R., Elwood, M., Scott, N., . . . Campbell, I. (2016). Stage of breast cancer at diagnosis in New Zealand: impacts of socio-demographic factors, breast cancer screening and biology. *BMC Cancer*, 16(1), 1-9. doi: 10.1186/s12885-016-2177-5

Stewart, B. W. K. P., & Wild, C. P. (2014). *World cancer report 2014*.

Stewart, B., & Wild, C. P. (2015). *Korle-Bu Teaching Hospital Annual Report World*.

Stewart, B., & Wild, C. P. (2015). *Korle-Bu Teaching Hospital Annual Report World*

Household Economic Burden of Breast Cancer Disease in Female Population

Suami, H., Pan, W. R., Mann, G. B., & Taylor, G. I. (2008). The lymphatic anatomy of the breast and its implications for sentinel lymph node biopsy: a human cadaver study. *Ann Surg Oncol*, 15(3), 863-871. doi: 10.1245/s10434-007-9709-9

Vondeling, G. T., Menezes, G. L., Dvortsin, E. P., Jansman, F. G. A., Konings, I. R., Postma, M. J., & Rozenbaum, M. H. (2018). Burden of early, advanced and metastatic breast cancer in The Netherlands. *BMC cancer*, 18(1), 262.

Wang, Q., Li, J., Zheng, S., Li, J.-Y., Pang, Y., & Huang, R. (2012). Breast cancer stage at diagnosis and area-based socioeconomic status: a multicenter 10-year retrospective clinical epidemiological study in China. *BMC Cancer*, 12. doi: 10.1186/14712407-12-122

Youlden, D. R., Cramb, S. M., Dunn, N. A., Muller, J. M., Pyke, C. M., & Baade, P. D. (2012). The descriptive epidemiology of female breast cancer: an international comparison of screening, incidence, survival and mortality. *Cancer Epidemiol*, 36(3), 237-248. doi: 10.1016/j.canep.2012.02.007