


Cancer Costs and Economic Burden

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OPEN ACCESS

Manuscript ID:
ASH-2021-09013840

Volume: 9

Issue: 1

Month: July

Year: 2021

P-ISSN: 2321-788X

E-ISSN: 2582-0397

Received: 16.03.2021

Accepted: 24.05.2021

Published: 01.07.2021

Citation:

Vishnu, S., and
A. Sangamithra. "Cancer
Costs and Economic
Burden." *Shanlax
International Journal
of Arts, Science and
Humanities*, vol. 9, no. 1,
2021, pp. 125-130.

DOI:

[https://doi.org/10.34293/
sijash.v9i1.3840](https://doi.org/10.34293/sijash.v9i1.3840)



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Abstract

Cancer and its treatment result in the harm of economic resources and opportunities for patients, families, employers, and society. These losses include fiscal loss, morbidity, reduced excellence of life, and premature death. When estimating the economic burden of disease, the monetary valuation of resources wont to treat, so the loss of opportunities because of illness is measured as costs and finds out the components.

Keywords: Health, Cancer, Economic burden & Costs, Cost components

Introduction

Cancer is a public health issue and a large group of diseases that can start in almost any organ or tissue of the body when abnormal cells grow uncontrollably, go beyond their usual boundaries to invade adjoining parts of the body spread to other organs. The latter process is called metastasizing and is a cause of death from cancer (World Health Organization). Cancer incidence and mortality have been reduced in developed countries due to several factors, including advances in early detection, diagnostic approaches, and cancer treatment, and lifestyle changes, and the development of preventive vaccines for some cancers (Remon Luengo-Fernandez et al.). More than half of new cancer patients and two-thirds of cancer-related deaths now occur in developing countries. Cancer has become one of the causes of death in India. Most cancer patients in India are revealed under the pressure of the astronomical cost of treatment. What hits them even harder is the exorbitant amount of money paid for the drugs that are crucial for a cancer patient's survival at an advanced stage. It can be a drain on the resources of families belonging to the middle or lower-income group. The mounting cost of cancer care can drive most families to the brink of bankruptcy (Nair et al.). Households with a cancer patient experienced significantly higher Out-Of-Pocket Expenditure (OOPE) per capita as compared with households having a non-cancer patient lower income group face distress financing even seeking treatment in the public sector (Khan et al.).

Objective

- To know the cost of cancer and the economic burden of the past studies.
- To find the components of health costs.

Methodology

The study source collected from secondary data were PubMed, WHO, Google Scholar, Research Gate, Science Direct, Shodhganga, etc

Review of Literature

Rath et al. (1995) made a study on the cost of management of tobacco-related cancers in India. It has been hypothesized by many scientists that the expenditure incurred on treatment of tobacco-related diseases is much more than the revenue generated by tobacco. Indian Council of Medical Research initiated a project to test this hypothesis. This report presents the preliminary results of the cost of management of tobacco-related cancers. A total of 342 patients were interviewed regarding the expenditure incurred by them or their relatives/friends before reaching the hospital on diagnosis and treatment of the disease, including expenses incurred on travel, lodging, and food. Any loss of wages because of the disease was also considered. The patients are being followed up to collect information on subsequent expenditures. Information on the rehabilitation of tobacco-related cancer patients is also being collected. The preliminary results after two and a half years of follow-up indicate that these patients have so far spent on average Rs. 14,577 for diagnosis, treatment, and follow-up of the disease. The expenditure also includes the cost of travel, lodging, boarding, and loss of wages to the patient and relatives/friends. The study concluded that in India, an estimated 133,000 persons developed cancer in 1990 as a due to of their tobacco use. This suggests a nationwide expenditure of Rs. 1.94 billion by patients of tobacco-attributable cancers diagnosed in 1990 for their treatment.

Sharma et al. (2009), the incidents of cancer are increasing worldwide and hence the economic cost associated with its management. It is calculated that in 2000, about 11 million cases cancer when diagnosed worldwide, 7 million people died of cancer, and 25 million wars live with it. By 2030 it could be expected that the will be 27 million incidence cases full stop ,17 million cancers there annually, and 75 million persons alive with cancer. The effect of this increase will fall on the low resource can be utilized in managing this diseases cancer could become an independent to the social-economic development of this economically Emerging nation. Hence there is a growing need in the health sector to leave within budget in India. In time to come, a cost analysis will be an important component in policy-making effective Health Care delivery.

A comparative study on the monthly Out-Of-Pocket Costs (OOPC) for patients with breast cancer as compared with other common cancers in Ontario, Canada was done by Longo et al (2011) A questionnaire administered in cancer clinics in the province of Ontario, with a mix of urban and rural patients, was analyzed using descriptive statistics and regression analysis of cross-sectional data. The dependent variable was OOPC (Canadian dollars), analyzed separately for total OOPC (excluding imputed travel costs) and for each of the individual cost categories. The findings highlighted the fact that the financial burden for cancer patients can vary by tumor type and that patients with breast cancer may require a different mix of supportive services than do patients with other common tumor types. Supportive care programs related to financial burden should consider the likelihood and nature of financial burden when counseling breast cancer patients.

Nair et al. (2013) assessed the treatment pattern and expenditure incurred by cancer patients undergoing treatment at government tertiary hospitals in India. A cross-sectional study of 508 cancer patients randomly selected from tertiary cancer hospitals funded by central, and state governments located in cities of five states in India, namely Kerala, Maharashtra, Rajasthan, West Bengal, and Mizoram, during March-May 2011 was conducted. Information related to direct costs, indirect costs, and opportunity costs incurred on investigations and treatment, the source of payment, and difficulties faced by patients during treatment were collected. About 45 percent of the patients used private health facilities as the first contact for cancer-related diseases as against 32 percent in public hospitals. About 47 percent sought private health facilities for cancer investigations, 21 percent at district sub-district hospitals, and about 4 percent contacted primary health care facilities. A majority of the patients (76 percent) faced financial problems while undergoing treatment. The results highlighted the importance of involving the primary health care system in cancer prevention activities.

Economic Burden and Costs of Cancer

Cancer and its treatment termination in the loss of economic possessions and opportunities for patients, families, employers, and society overall. The

cancer burden continues to grow globally, exerting tremendous physical, emotional, and financial strain on individuals, families, communities, and health systems. Many health systems in low- and middle-income countries are least prepared to manage this burden, and large numbers of cancer patients globally don't have access to timely quality diagnosis and treatment. In countries where health systems are strong, survival rates of the many sorts of cancers are improving to accessible early detection, quality treatment, and survivorship care. (World Health Organization). Mahal et al., (2013) assessed the burden of cancer on household's Out-Of-Pocket Health Spending (OOPHS), non-medical consumption, workforce participation, and debt and asset sales using data from a nationally representative health and morbidity survey in India for 2004 of nearly 74 thousand households. Propensity scores were used to match households containing a member diagnosed with cancer (i.e., cancer-affected households) to households with similar socioeconomic and demographic characteristics (controls). The estimates are supported by data from 1,645 households chosen through matching. Cancer-affected households experienced higher outpatient visits and hospital admissions and increased out-of-pocket health expenditures per member relative to controls.

Direct Cost

The direct medical cost was estimated from the health-care resources utilized by the patients enrolled during this study. It included personnel expenses (medical and paramedical personnel), laboratory tests, radiologic tests, biopsies, and other diagnostic expenditures for examinations or procedures, medicine, operations, and other interventional procedures and expenses for admission and therefore the direct medical cost was calculated by multiplying the entire amount of every medical resource by the unit cost. The summation of cost from all resources utilized was considered to comprise all medical costs for patients (Kim et al.). Direct medical costs are those that are associated with services that patients receive, including hospitalizations, surgery, physician visits, radiotherapy, and chemotherapy immunotherapy, and are typically measured by insurance payments

and patient out-of-pocket co-payments and deductibles. Within each phase of care, the direct medical costs related to cancer vary significantly by cancer site (Yabroff et al.).

Table 1: Direct Components of Health Costs

- Specialist physician services (public and private)
- General practitioner services (public and private)
- Non-physician personnel services (public & private)
- Midwifery services (public and private)
- Emergency services (public and private)
- Services received at home
- Outpatient surgery (public and private)
- Hospitalization for surgical services (public and private)
- Hospitalization without surgical services (acute diseases) (public and private)
- Hospitalization without surgical services (chronic disease) (public and private)
- Services related to a specific disease
- Purchasing organ for transplantation
- Day clinic services
- Official drugs, uncovered by health insurance, according to the approved price (available at pharmacies)
- Purchasing medical equipment
- Receive services cosmetic (skincare, hair)
- Public health services, particularly maternal and child services (public and private)
- Eldercare services (health-related expenses)
- Premiums for basic health insurance mandatory
- Basic health insurance premiums for voluntary
- Premiums for supplemental insurance
- Receive diagnostic services (including laboratory, imaging, and genetic counseling clinic)
- Under the table payment, as money (voluntary / involuntary as a condition for receiving service)
- Purchasing drugs that have been imported unofficially
- Purchasing medical equipment have been imported into the country unofficial
- Purchasing traditional medicines (purchasing outside of the insurance system and out of the pharmacy)
- Receive health services as the non-official person (who are ineligibly approved by ministry of health)
- Reception expenses for health care providers (such as dinner)
- Patient housing costs, the city where the service received (other than admission)

Source: Yousefi et al.

Indirect Cost

The Indirect costs refer to those costs incurred not as a result of medical management of the disease but rather of other incurred losses such as lost wages, lost productivity, and costs resulting from the need for home care and child care that would otherwise not be incurred the Indirect costs mainly productivity losses to society caused by the health problem or disease. (Yousefi et al.) Indirect costs of cancer are the monetary losses associated with time spent receiving medical care, time lost from work or other usual activities (morbidity costs), and lost productivity use to premature death (mortality costs). These costs were incurred by patients as well as their caregivers and families. Because these lost opportunities are not typically reflected in monetary transactions, time must approximate the main approaches for valuing time are the human capital and the Willingness-To-Pay (WTP) methods. In the human capital approach, gender- and age-specific average earnings are combined with time lost from work or years of working life lost due to premature death to estimate unrealized earnings. This approach explicitly values the time of individuals or populations with greater earnings as greater than the time of individuals or populations with fewer earnings. WTP approaches, in contrast, incorporate both lost productivity and the intrinsic value of life, by estimating the amount an average individual or population of individuals would be willing to pay for an additional year of life. Because cancer incidence & mortality rates are higher in the elderly, a population less likely to be in the workforce than their younger counterparts, these valid, conceptually different approaches yield very different estimates of indirect costs of cancer health cost. (Yabroff et al.)

Table 2: Indirect Components of Health Costs

- Expenses related to the patient’s permanent disability due to illness
- Expenses related to the patient’s temporary disability due to illness
- Expenses related to the patient’s family temporary disability
- Expenses related to the patient’s changing jobs
- Expenses related to patient’s family changing jobs
- Transportation expenses associated with patient family

- Patient’s family food expenses (above the normal cost of food) (in place of service receiving)
- Expenses related to patient’s family housing (in place of service receiving)
- Expenses of information and communication technologies (telephone, internet, etc.)
- Expenses resulting from the change in location due to the illness of a family member

Source: Yousefi et al.

Intangible Cost

Intangible costs are those associated with function loss, increased pain, and reduced life quality Depression is a state of mind characterized by negative mood, low energy, loss of interest in actions, pessimism, quixotically negative thoughts about self and the future, and social removal. Stress is a prolonged state of psychological and physiological arousal leading to negative effects on mood, cognitive capacity, immune function, and physical health. Anxiety: A fearful mood that has a vague or no specific focus and is accompanied by bodily arousal. Disability is an umbrella term for impairments, activity limitations, and participation restrictions (Yousefi et al.)

Table 3: Intangible Components of Health Costs

- The pain of disease for the patient
- Patient’s family suffering due to patient’s pain
- Patient Depression1 due to disease
- Patient’s family Depression
- Patient’s Stress and anxiety due to inability to pay health costs
- Patient’s family stress and anxiety concerning the inability to pay for health costs
- Patient stress and anxiety concerning the behavioral disabilities due to disease
- Patient’s family stress and anxiety concerning the behavioral disability due to disease
- Patient stress and anxiety concerning the Communication disabilities due to disease
- Patient’s family stress and anxiety concerning the Communication disabilities due to disease
- Patient stress and anxiety concerning the Occurring a self-care disability
- Patient’s family stress and anxiety concerning the Occurring the patient’s self-care disability
- Patient stress and anxiety concerning the mobility disabilities

- Patient's family stress and anxiety concerning the mobility disabilities for the patient
- Patient stress and anxiety concerning the Body disposition disabilities
- Patient's family stress and anxiety concerning the Body disposition disabilities Occurring to patient
- Patient stress and anxiety concerning the Occurring Dexterity disabilities
- Patient's family stress and anxiety concerning the occurring Dexterity disabilities for patients
- Patient stress and anxiety concerning the occurring Situational disabilities
- Patient's family stress and anxiety concerning the occurring Situational disabilities for patients
- Patient stress and anxiety concerning the occurring Particular skill disabilities
- Patient's family stress and anxiety concerning the occurring Particular skill disabilities for patients
- Patient stress and anxiety concerning the economic problems and self-sufficiency disabilities
- Patient's family stress and anxiety concerning the occurring Economic self-sufficiency disabilities for patients
- Patient stress and anxiety concerning the confusion in selecting a physician
- Patient's family stress and anxiety concerning the con-fusion in selecting a physician
- Patient stress and anxiety concerning the selection of treatment center
- Patient's family Stress due to confusion in the selection of treatment center
- Patient stress resulting from loss of time due to long waiting lists
- Patient's family stress resulting from loss of time due to long waiting lists
- Stress imposed on the patient due to lack of confidence in the quality of health services
- Stress imposed on the Patient's family due to lack of confidence in the quality of health services
- Stress imposed on the patient due to lack of confidence in the health insurance system
- Stress imposed on the Patient's family due to lack of confidence in the health insurance system
- Patient stress due to the probability of poor responsiveness from health services providers
- Patient's family Stress due to the probability of poor responsiveness from health services providers
- Patient stress about treatment result
- Patient's family stress about treatment result

- Patient anxiety resulting from lack of sufficient knowledge of his/her disease
- Patient's family anxiety resulting from lack of sufficient knowledge of his/her disease
- Patient stress and anxiety concerning the possibility of re-admission
- Patient's family stress and anxiety concerning the possibility of readmission
- Patient stress and anxiety concerning the possibility of being isolated from family and community
- Patient's family stress and anxiety concerning the possibility of being isolated from family and community

Source: Yousefi et al.

Prevalence Cost and Incidence Cost

Phase-specific cost estimation can also be together with phase-specific prevalence estimates obtained from cancer incidence and survival data to estimate the prevalence costs of cancer care by year. Cancer costs are stated starting at diagnosis or the time of an exact event for a group of cancer patients defined by clinical characteristics (incidence costs) or for all cancer survivors alive in a specific year (Prevalence Cost). Incidence cost estimates are reported at the personal level for many periods following diagnosis, ranging from several months to patient lifetime. Incidence costs can also be reported for all newly diagnosed cancer patients at the aggregate national level (Yabroff et al).

Conclusion

Good health is contributor to productivity and economic well-growth. Expenditure on these factors leads to reduced mortality and enhanced time availability for earning income. Cancer is one of the most causes of morbidity and the magnitude of the problem is gigantic. Its problem on the economy for providing health care will be considerable. For the treatment of cancer patients, hospitals, beds, sophisticated equipment, machinery, drugs, and other health care facilities such as trained nurses, oncologists, a large number of hospital days are required. In addition to this, the indirect costs such as loss due to premature deaths, loss due to the hindrance of productivity, economic dependence, etc. cannot be quantified. Cancer prevention and control is the most appropriate measure. Cancer occurrence is growing,

owing to a mix of risk causes such as changes in diet & lifestyle, the legacy of high tobacco consumption along with population aging with cancer being more common in older populations. (Popkin et al., 2001 and Murthy et al., 2008).

Acknowledgment

RUSA 2.0 (BCTRC), the Funded project entitled “Economic Consequence of Coping Up Mechanism”, and in the article as a part of the project’s study.

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