

## **A review of Socio Economic Factors impact on Cancer incidence**

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### **Abstract**

Cancer is a leading cause of death worldwide. Cancer is the uncontrolled growth of cells, which can invade and spread to distant sites of the body. Cancer can have several health consequences and is a leading cause of death. Each year, 10 of millions of people are diagnosed with cancer around the world, and more than half of the patients eventually die from it. Even Sri Lanka the cancer incidence have increased from 2000. This article is a review of what are the socio economic factors affecting for cancer incidence across the world. Randomly selected 15 international journal articles published during 2000-2015 time period were used for this review. Around the world socioeconomic factors such as social background, occupation, income and habitual works and environmental factors are affect for cancer incidence in more and it effect on economically as well. However, there is no more studies about ‘socio economic factors affected on cancer in Sri Lanka’. Therefore further studies are needed to confirm these findings in other health and social welfare strategies in Sri Lanka.

**Keywords:** *Cancer, death, socio economic factors*

### **Introduction**

Cancer is a complex group of diseases with many possible causes. Cancer arises from the abnormal and uncontrolled divisions of s cells, known as cancer cells that then invade and destroy the surrounding tissues.

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Definition of cancer by medical dictionary is “cancer is not a just one disease, but large group of almost 100 disease. Its two main characteristics are uncontrolled growth of the cells in the human body and the ability of these cells to migrate from the original site and spread to distant sites. If the spread is not controlled, cancer can result in death”. According to the World Health Organization “Cancer is the uncontrolled growth of cells, which can invade and spread to distant sites of the body” (World Cancer day-2016). Cancer can have several health consequences and is a leading cause of death. There are more than 100 types of cancer (National cancer institute- 2016). Lung cancer, Prostate Cancer, Colorectal Cancer, Stomach Cancer, Liver Cancer, Breast Cancer, are some most common types of cancer. lung, prostate, colorectal, stomach and liver cancer are the most common types of cancer in men, while breast, colorectal, lung, uterine cervix and stomach cancer are the most common among the women. (National Health Institute 2016)

## **Methodology**

Simple randomly selected 15 research articles from 30 international journals published during the time period of 2000-2015, and secondary data sources such as World health organization (WHO), World Cancer Research Fund and National Cancer Control Program of Sri Lanka were used for this review.

## **Trends of Cancer**

### **Global trends**

Cancer has a major impact on society across the world. Each year, 10 of millions of people are diagnosed with cancer around the world, and more than half of the patients eventually die from it (Ma & Yu, 2006). In many countries, cancer ranks the second most common cause of death following cardiovascular diseases(Ma & Yu, 2006). Based on the GLOBCAN database, there were about 10826496 new cancer cases in the world in 2002(Ma & Yu, 2006). For women the top three cancer mortality were breast cancer, lung and cervix uteri, while lung, stomach and liver constructed the top three sites of cancer mortality for men (Ma & Yu, 2006)

Today, global situation in cancer problem is changer from past. According to estimate from the International Agency for Research on Cancer (IARC), there was 1401 million cancer cases in 2012 worldwide. The highest cancer rate for men and women together was found in Denmark people per 100,000 diagnosed in 2012. The countries in the top ten come from Europe, Oceania, Northern America and Asia (World Cancer Research Fund International 2015) for both sexes. The countries top 5 come from including with Denmark USA, Korea Republic of, Netherlands and Belgium. There were an estimated 14.1 million cancer cases around the world in 2012, of these 7.4 million cases were men and 6.7 million in women (World Cancer Research Fund International 2015). The number is expected to increase to 24 million by 2035 (World Cancer Research Fund International 2015).

### **Trends in Sri Lanka**

Even Sri Lanka the cancer incidence have increased from 128 per 100,000 population in 1980 to 287 in 2000. Similarly the death rate has increased by 1005 within these two decades. From 1985-2005 slightly increase in both male and female (Cancer, Programme, Mawatha, Lanka, & Registry, 2005) According to cancer incident data in Sri Lanka in 2007 a total of 13,635 new cancer cases had been diagnosed in 2007. The five leading cancer sites among males were, lip, oral cavity and pharynx, trachea, bronchus and lungs, esophagus, colon and rectum' and lymphoma (Data & Lanka, 2007). Among females, the top five cancer sites were breast, uterine cervix, thyroid gland, esophagus, and ovary(Data & Lanka, 2007).

The increase in the number of cases from 2008 to 2009 is 377 ("Cancer\_Incidence\_Data\_2009.pdf," n.d.). The crude incidence rate for all cancers was 82.6 per 100,000 population. The female highest cancer was breast and lip, oral, cavity, and pharynx cancer remained the leading cancer among males ("Cancer\_Incidence\_Data\_2009.pdf," n.d.). In 2010-2012 time period the most type of cancers were mouth, trachea, and stomach as well as breast cancer has become the first among female (Profile, Trends, & Incidence, 2014). There had been reported 6800 cancer deaths of males and 7200 deaths of females in 2014. Among them 18.8% were mouth and oropharynx and 15% trachea bronchus and lungs and also

9.75% were stomach. Among female deaths breast cancer remained first as same last years. Second and third most common cervix uteri and esophagus (Profile et al., 2014).

### **Socio economic Factors impact on cancer**

Monitoring socio economic, racial, and geographic disparities in health, disease and mortality has been the focus of many of the researchers.

A research of carried out in Finland studied that social class variation among 45 to 69 years old females in the incidence of cancers in the breast, ovary, corpus and cervix uteri (Pukkala & Weiderpass, 2002) and find out that cancers of cervix uteri and vagina were associated with low social class and cancers of the breast were most common in high social classes (Pukkala & Weiderpass, 2002). For cancer of the uvula and ovary no clear differences by social class were observed (Pukkala & Weiderpass, 2002).

A research in Sweden determined that the Standardized Incidence Ratio (SIR) for cancer adjusted for age, period, region, parity and women in six socio economic groups based on Swedish family-cancer database (Hemminki, Zhang, & Czene, 2003) The research reported that the overall SIR for cancer did not differ much, the lowest being for farmers and the highest for professional men and women (Hemminki et al., 2003). At individual sites, manual workers were at a risk of tobacco, alcohol and occupation and human papilloma virus related cancers and at a decreased risk at most other cancers (Hemminki et al., 2003). Manual workers and farmers showed an excess of stomach cancer, professionals had an excess of melanoma and squamous cell skin cancer and as well as male and female SIR correlated highly for manual and blue-collar workers and for professionals (Hemminki et al., 2003).

A similar study examined that smoking was highly significant to lung cancer mortality rates and alcohol had a positive relationship with prostate cancer mortality rates (Stare & Jozefowicz, 2008) and another research reported that men and women less than a high school education had evaluated lung cancer rate ratio of 3.01 and 2.02 respectively, relative to their college educated counterparts (Limin X. Clegg 2009)

A study about socio economic risk factors for breast cancer revealed that Women living in the highest socio economic status communities has greater odds of having breast cancer than women in the lowest socio economic status communities (Individual- et al., 2004) similarly a study of socioeconomic risk factors for breast cancer, examined whether living in such communities at greater risk of breast cancer and determined that the odds were greater for women in urban versus rural communities (Individual- et al., 2004)

Data on prostate cancer mortality, food consumption, tobacco use, socio economic factors, reproductive factors, and health indicators were obtained from United Nation sources and identified that prostate cancer mortality was inversely associated with estimated consumption of cereals (Hebert et al., 1998). Besides variables related to diet, and an association between prostate cancer mortality rates and a composite of other health-related sanitation and economic variables are statistically significant (Hebert et al., 1998).

Shannon M. Stare and James J. Jozefowicz (2008) conducted a study about effects of environmental factors on cancer prevalence rates in a sample of Organization for Economic Co-operation and Development (OECD) developed countries. Results that they were found that total fruit and vegetable intake and carbon monoxide both have a statistically significant relationship (Stare & Jozefowicz, 2008).

Fruit and vegetable consumption had a negative effect on cancer prevalence rates (Stare & Jozefowicz, 2008).

Another study about cancer disparities by race ethnicity highlighted that For all cancer sites combined, residents of poorer countries have 13% higher death rates from cancer in men and women compared with more rich countries (Ward et al., 2010).

To analyze socio economic as well as rural-urban and racial inequality in United States cancer mortality, Gopal K.Singh, and three others have done a research in 2011 and main findings that they were found; rural areas had higher cancer mortality than more rich and urban residents, with excess risk

being for lung, colorectal, prostate, and cervical cancers. Deprivation and rural-urban continuum were independently related to cancer mortality, with deprivation showing stronger impacts. Socioeconomic inequalities existed for both whites and blacks, with blacks experiencing higher mortality from each cancer than whites within each deprivation group. Socioeconomic gradients in mortality were steeper in nonmetropolitan than in metropolitan areas. Mortality disparities may reflect inequalities in smoking and other cancer-risk factors, screening, and treatment (Singh, Williams, Siahpush, & Mulhollen, 2011).

In Sri Lanka cancer incidence Adult risk factors caused for cancer incidence in 2010, 2011, 2012, were respectively physical inactivity, current tobacco smoking, and household solid fuel usage. In 2014 the most common risk factor for cancer incidence was the obesity (Profile et al., 2014)

### **Economic impact**

Economic measures are important for cancer outcome and its impact on economic globally, individually direct or indirect. The total impact of premature death and disability from cancer worldwide was \$895 billion in 2008 (The American Cancer Society & LiveStrong, 2010). Death and disability from lung, colon, rectal and breast cancer account for the largest economic cost on a global scale. In low income countries, cancer in the mouth and throat, cervix and breast have the greatest impact as well as the burden on individual and families is profound especially in low and middle income countries (The American Cancer Society & LiveStrong, 2010).

Another study related to economic impact of cancer, investigated economic cost of cancer in the context of patients' emotions and how these both shaped the patient and family burden and find out the inter-relationship between the economic and emotional consequences of colorectal cancer. In this study they highlighted that important cancer-related financial outlays such as travel, and parking associated with hospital appointment cost of procedures increased household bills (Céilleachair et al., 2012). In addition cancer impacted on employed individuals' ability to work and depressed

their income and the opportunity cost of informal care for family members especially immediately post-diagnosis was strong and there is strong inter-relationship between the economic and emotional impact on disease (Céilleachair et al., 2012). Cancer and its treatment result in the loss of economic resources and opportunities for patients, families, employees, and society overall (Yabroff, Lund, Kepka, & Mariotto, 2011).

## **Conclusion**

Cancers figures among the leading causes of morbidity and mortality worldwide. As elderly people are most susceptible to cancer and population aging continues in many countries, cancer will remain a major health problem around the world. Around one third of cancer deaths are due to the 5 leading behavioral and dietary risks, high body mass index, low fruit and vegetable intake lack out physical activities, tobacco use alcohol use. Tobacco use is the most important risk factor for cancer causing around of global cancer deaths and around 70% global lung cancer deaths. More than 60% world's total new annual cases occur in Africa, Asia and central South America. These regions account for 70% of deaths of worldwide cancer deaths.

Socioeconomic status have significant impact on cancer which are highlighted that many researchers in their study. Among those socio economic status, gender, occupation, family background and education are very important. Furthermore race, geographical, environmental factors especially food consumption habits are related for cancer incidence as well as the final result cancer effect on economically, individually, family, society, globally.

However, there is rare, studies about socio economic factors affected on cancer situation in Sri Lanka and how socio economic factors differ in cancer incidence in Sri Lankan society. Therefore further studies are needed to confirm these findings in other health and social welfare strategies in Sri Lanka.

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