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CANCER PREVALENCE AND TREATMENT IN INDIA: A STUDY OF THE BACKGROUND OF AFFECTED PEOPLE

Abstract

Cancer is one of the leading causes of mortality and morbidity and a foremost health problem of the present age in the world. Despite considerable advances in science and medicine, cancer has emerged as the second leading cause of death worldwide following cardiovascular disease. The increase in cancer incidence has been due to the epidemiological transition aided by increasing life expectancy, ever-aging population along with more prevalent unhealthy lifestyles. As per the latest estimates, there were 18.1 million new cancer cases and 9.6 million cancer deaths in 2018 around the world. In India, more than 1.15 million cases with 0.78 million cancer deaths were registered in 2018. Making an analytical and descriptive analysis of the secondary sources of the data, the present paper proposes to explore the prevalence of cancer and its treatment in India based on certain background characteristics of affected people. The findings so analyzed on the basis of NFHS-4 data reveal that 0.2 per cent of women have reported to have cancer and of them 65.6 per cent have sought treatment. Likewise, 0.3 per cent of men have reported to be with cancer and 34.6 per cent have sought treatment for it. By outlining a brief discussion of the factors for cancer incidence, the work concludes that India's cancer burden is not the outcome of any single factor instead there are hidden socio-cultural trajectories that need special attention in research and policy formulation.

Keywords: *Mortality, Morbidity, Non-communicable disease, Socio-cultural factors, Treatment.*

Introduction

There is no society which does not experience the prevalence of various diseases. In fact, disease is a universal phenomenon found almost in all human societies irrespective of the consideration how well-developed or under-

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developed these societies are economically. From a functionalist perspective, it can be argued that disease is a social fact. It is experienced by all societies, external to individuals and capable of exerting external constraint on the behavior of individuals (Akram 2014: 72). Disease is a form of social abnormality rather than physical or individual abnormality or in the words of Parsons it is a form of deviance which disturbs the society's functioning in just the same way as a crime or other forms of deviance (Haralambos et al. 2013: 303). From a conflict perspective, which derives its inspiration from the works of Karl Marx, disease is the result of structural, economic and political developments within a society. The sociologists looking at health from the conflict perspective are concerned with the relation between health, illness and social organization within a society and how their meanings and definitions are influenced by the economic activity. Likewise, symbolic interactionists perspective on health and illness provides with new insights on the social organization of illness and disease. Symbolic interactionists focus on the meanings that social actors give their illness or disease and how these affect people's self-concept and relationship with others (Akram 2014: 38). They are of the opinion that we socially construct health and illness and how both should be treated. For example, if we attribute cancer to the acts of a person, we can assume that we will be immune to that disease if we do not engage in the same behavior. This perspective focuses on how health and disease of individuals are influenced by meanings, definitions and labels and how such meanings are learned through interaction with others.

Chronic non-communicable diseases are assuming increasing importance in both developed and developing countries. Cardiovascular diseases and cancer are at present the leading causes of death. The prevalence of chronic diseases is showing an upward trend for several reasons like the increasing life expectancy making people to live to older ages and at greater risk, changing lifestyles and behavioral patterns of the people favorable to the onset of chronic diseases. The impact of chronic diseases on the lives of people is serious when measured in terms of loss of life, disablement, family hardship, poverty, and economic loss to the country (Park 2019: 391). The World Health Organization (WHO 2018a: 10) estimates that a total of 57 million deaths occurred during 2016 worldwide. Of these, 41 million were due to non-communicable diseases (NCDs), principally cardiovascular diseases (17.9 million or 44 per cent), cancers (9 million or 16 per cent), chronic respiratory diseases (3.8 million or 9 per cent) and diabetes (1.6 million or 4 per cent). Reducing the global burden of non-communicable diseases is an overriding priority and a necessary condition for sustainable development (WHO 2014: 9).

Among different NCDs, cancer which Sidhartha Mukherjee (2011) calls 'The Emperor of all Maladies' in his Pulitzer winning biography of cancer, is one of the major causes of morbidity and mortality around the world. Cancer is a malignancy in which there is abnormal growth of cells having the ability

to spread to adjacent tissues and even distant organs of the body which can lead to the death of the affected person if the tumor has progressed beyond that stage when it can be successfully removed (Park 2019: 411). Cancer can occur at any site or organ of the body and may involve any type of the cells. Cancer is a multicausal disease with a long duration. Available research shows that there are generally two types of factors that give rise to cancer. These are the tendencies and the triggers. The tendencies that may also refer to internal factors of cancer indicate an inclination or predisposition towards cancer due to genetic, ethnic, or hereditary factors. The triggers or external factors which are located outside the body of the individual can arise from the environment, from one's lifestyle or from some virus (Bhat and Bhat 2013: 51-52). These external factors are generally identified as environmental factors and include different risk factors in the form of lifestyle, dietary habits, infections, pollution, occupational hazards, tobacco and alcohol consumption, socio-cultural, psychological and economic conditions and so on. Despite the availability of enough treatment options in the form of chemotherapy, radiotherapy, immunotherapy and palliative care cancer still remains a major global threat. It is the second leading cause of death after cardiovascular diseases (Sahoo et al. 2018: 86; Fitzmaurice et al. 2018: 524). The International Agency for Research on Cancer (IARC) estimates that one-in-five men and one-in-six women worldwide will develop cancer over the course of their lifetime, and those one-in-eight men and one-in-eleven women will die from the disease (WHO 2018b). The increase in cancer incidence is on the rise in both developed and economically developing countries, due to population aging attributed to increasing life expectancy aided by prevalence of cancer friendly lifestyles and behavioral patterns such as smoking, alcohol, infections and physical inactivity; socioeconomic factors have led to the appearance of cancer as a major public health problem (Mohan et al. 2018: 221). Poor access to preventive services, late diagnosis, lack of proper diagnostic and quality treatment also contribute to higher burden of cancer (Dar and Sharma 2019: 505). As per the GLOBOCAN World 2018 data, there were estimated 18.1 million new cancer cases and 9.6 million cancer deaths in 2018 worldwide (Bray et al. 2018: 1). Overall, lung cancer is the most commonly diagnosed cancer (11.6 per cent of the total cases) and the leading cause of cancer death (18.4 per cent of the total cancer deaths), followed by female breast cancer (11.6 per cent of the total cases and 6.6 per cent of the total deaths) (Bray et al. 2018: 1; Sahoo et al. 2018: 86). The trends and patterns of cancer differ from country to country with the levels of the development. Due to the fast growing economy along with changes in lifestyle related behaviors, India is also experiencing simultaneous increase in cancer cases (Srinath et al. 2005: 1745). In India, in 2018 more than 1.15 million new cancer cases were registered with 0.78 million cases of deaths (GLOBOCAN India Factsheet 2018). The magnitude of cancer problem in the Indian sub-continent is increasing due to poor to moderate living standards and inadequate medical facilities (Ali et al. 2011: 56). In India the most frequently observed

prevalent forms of cancer among men are tobacco related cancers, including lip/oral cavity (16.1 per cent cases), lung (6.45 per cent cases), esophagus (3.65 per cent cases) and others. Amongst Indian women, in addition to tobacco related cancers, cervix (16.5 per cent), breast (14 per cent cases) and ovarian (6.2 per cent cases) cancers are most common (GLOBOCAN India Factsheet 2018; Bray et al. 2018: 1). Besides these the incidence of colorectal cancers (9.8 per cent), head and neck cancers, gallbladder cancer (2.47 per cent) and others are most prevalent forms of cancer in India (GLOBOCAN India Factsheet 2018). There are significant variations with regard to the prevalence of various cancers in India when compared to other developed countries of the world. Even within India, variations exist in the prevalence and patterns of different cancer sites.

Tyagi et al. (2018: 103) in their study have found stomach, oral, esophagus and leukemia cancers as common among males while cervix, breast, oral and esophagus cancers to be common among females in southern India. Ali et al. (2011: 58) documented the geographical distribution of different cancers in India. According to them, stomach cancer is the second most common cancer in Andhra Pradesh and Nagaland and the third commonly reported cancer in Jammu & Kashmir, Sikkim, Arunachal Pradesh, Tamil Nadu, Mizoram and Goa. Oral cancer is the second and third most common cancer in Goa and Assam, respectively. Head and neck cancer is prevalent in Tripura and esophageal cancer is a common type of malignancy after lung cancer in Jammu and Kashmir, Assam and Karnataka. Tongue cancer is the most common type of cancer in Madhya Pradesh and the second most in Goa. Similarly, Maiti et al. (2012: 445) have found head and neck, lungs and oral cancers among males whereas breast cancer followed by cervical and stomach cancers among females as the major sites of cancer in eastern states of India. In contrast, among north Indian males, gastrointestinal tract, larynx and lung are major cancers and among females breast, cervix and lung were leading malignancies (Sharma et al. 2012: 3500). These differences in the prevalence of various cancers across the country could be due to the diversity in the risk factors in the form of genes as well as the other environmental attributes (Tyagi et al. 2018: 104). The risk factors for rising burden of cancer in India are not that much different from the rest of the world. Although some authors argue that the risk factors in the causation of cancer in India are almost same as in other parts of the world (Anand et al. 2008: 2099; Ali et al. 2011: 67; Mohan et al. 2018: 221), the specific socioeconomic patterns and bio-cultural factors necessitate exploring other causation trajectories of cancer in India. Situated within this background, the present study is an attempt to explore cancer prevalence and treatment in India with special focus on the socio-cultural background of the people affected by the disease.

Methodology

The present paper is an analytical and descriptive one. The work is

based on secondary sources. The data is taken from reports like GLOBOCAN (2018), NFHS-4: 2015-16 (2017) and several other published papers. GLOBOCAN is an online accessible database produced by International Agency for Research on Cancer (IARC) which provides global estimates of incidence, mortality and prevalence for all cancer sites combined worldwide using the best accessible information in every nation to build a global cancer profile. The National Family Health Survey (NFHS-4) 2015-16 (2017) is the fourth report in the NFHS series. This survey was conducted by International Institute for Population Sciences, Mumbai between 20 January 2015 to 4 December 2016 by 14 field agencies and it gathered information from 601,509 households, 699,686 women and 103,525 men. Further, as mentioned in the report, a two-stage sampling design was adopted in the rural and urban areas of each district of India to provide district level estimates (NFHS-4 2017).

Findings and Discussion

The major findings of the study have been discussed into the following headings and subheadings and shown in the form of tables.

Magnitude of Cancer-Global

Globally, cancer is recognized as a major contributor to health problems both by incidence as well as mortality (Gandhi et al. 2016: 12). According to the GLOBOCAN World (2018) the global burden of cancer rose to an estimated 18.078 million new cases with 9.55 million deaths in 2018 worldwide compared with 14.1 million cases and 8.2 million deaths in 2012. Globally, one among five males and one among six females develop cancer during their lifespan, and one among eight males and one among eleven females die from the cancer (Dar and Sharma 2019: 506). Worldwide, the 5-year prevalence is projected to be 43.8 million. By 2040, the global cancer burden is anticipated to reach 29.5 million new incident cases and 16.3 million deaths (WHO 2018c). Overall lung cancer is the most frequently diagnosed cancer (11.6%) and is responsible for 18.4% cancer deaths in both sexes combined (Kishore and Kiran 2019). The top five most incident cancers in both sexes combined are lung cancer (11.6%), female breast cancer (11.6%), colorectal cancer (10.2%), prostate cancer (7.1%), and stomach (5.7%). For mortality lung cancer (18.4%) is followed by cancers of colorectal (9.2%), stomach (8.2%), liver (8.2%), and breast (6.6%). Table 1 gives the summary of global picture of cancer in terms of incidence and mortality among males and females. Further, by sex, lung cancer is the most commonly diagnosed cancer and the leading cause of cancer death for both sexes (Table 1) closely followed by breast, colorectal and prostate cancer for incidence among females. Among males after lung cancer the most commonly diagnosed cancers are prostate, colorectal, stomach for incidence and the liver, stomach, colorectal for mortality (Table 2). Bray et al. (2018:1) has also presented similar analysis.

Table 1: Major types of cancer by incidence and mortality for both sexes for all ages worldwide in 2018

Cancer type	Incidence		Mortality	
	Cases	Percentage	Cases	Percentage
Lung	2,093,876	11.6	1,761,007	18.4
Breast	2,088,849	11.6	626,679	6.6
Colorectal	1,849,518	10.2	880,792	9.2
Prostate	1,276,106	7.1	358,989	3.8
Stomach	1,033,701	5.7	782,685	8.2
Liver	841,080	4.7	781,631	8.2
Esophagus	572,034	3.2	508,585	5.3
Cervix	569,847	3.2	311,365	3.3
Pancreas	458,918	2.5	432,242	4.5
Other cancers	7,753,946	42.9	3,422,417	35.8

Source: GLOBOCAN World. 2018

Table 2: Types of cancer among males and females for incidence and mortality by percentage worldwide in 2018

Cancer type	Males		Females	
	Incidence Percentage	Mortality Percentage	Incidence Percentage	Mortality Percentage
Prostate	13.5	Liver 10.2	Breast 11.6	Colorectal 9.2
Colorectal	10.9	Stomach 9.5	Colorectal 10.2	Stomach 8.2
Stomach	7.2	Colorectal 9.2	Prostate 7.1	Liver 8.2

Source: GLOBOCAN World. 2018

Cancer Burden and Treatment in India

Cancer is a key healthcare concern in both developed and developing countries. Cancer is emerging as the leading cause of death worldwide. A major portion of population dies annually of cancer which is posing a great challenge to health related practitioners and academicians. Cancer is one of the important causes of morbidity and mortality in India. With increased detection and advancement in cancer, India is also experiencing worrying increase in cancer incidence and mortality. Globally, out of 14 million diagnosed new cancer cases, slightly more than 1 million were from India in 2012 (Mallath et al. 2014: 1). The summary of cancer statistics in India for males and females with the number and percentage is given in Table 3.

Table 3: Major forms of cancer found in India among both sexes for all ages in 2018

Cancer type	Males		Cancer type	Females	
	Cases	Percentage		Cases	Percentage
Lip/oral	92011	16.1	Breast	162468	27.7
Lung	48698	8.5	Cervix	96922	16.5
Stomach	38818	6.8	Ovary	36170	6.2
Colorectal	36687	6.4	Lip/oral	27981	4.8
Esophagus	33890	5.9	Colorectal	20064	3.4
Other cancers	319941	56.1	Other cancers	243644	41.5

Source: GLOBOCAN India Factsheet. 2018

Further, the data provided by International Agency for Research on Cancer (2018) show that for both sexes combined, breast cancer is the most frequently observed cancer (14%) and it is the leading cause of cancer death (11.1%) in India. In terms of incidence, breast cancer is followed by cancer of lip oral cavity (10.4%), cervix uteri (8.4%), lung (5.9%), and stomach (5%). Cancers of breast, lip oral cavity, and cervix uteri are responsible for more than 32% of the total cancer burden. For mortality, breast cancer is followed by cancers of lip oral cavity (9.3%), lung (8.1%), cervix uteri (7.7%), and stomach (6.6%). India continues to have a rising incidence of cancer cases, prevailing among both sexes of all ages. The NFHS-4 (2017) data reveal that there is 0.2 percent (total no. of respondents = 6,99,686) prevalence of cancer among women aged 15-49 and of them 65.6 percent (total no. of respondents = 6,99,686) have sought treatment for it. Further, 0.3 percent (total no. of respondents = 1,03,411) of men aged 15-49 have reported to be with cancer and 34.6 percent (total no. of respondents = 1,03,411) of them have sought treatment for cancer. The major findings derived from the NFHS-4: 2015-16 (2017) report are shown in Tables 4 and 5.

Table 4: Men and women having cancer by age, residence, marital status and religion

Background characteristic	Percentage with cancer	Men		Women		Number of respondents	
		Percentage with cancer who have sought treatment	Number of respondents	Percentage with cancer	Percentage with cancer who have sought treatment		
Age in years	15-19	0.2	14.6	18740	0.1	42.0	121533
	20-34	0.3	47.4	47399	0.1	63.2	334790
	35-49	0.3	26.3	37272	0.1	73.8	243363
Residence	Urban	0.3	20.1	39549	0.2	70.3	242296
	Rural	0.3	44.1	63862	0.2	63.1	457390
Marital status	Never married	0.2	28.9	39631	0.1	50.8	159015
	Currently married	0.3	37.2	62500	0.2	68.6	511377
	Widowed/divorced	0.3	60.2	1280	0.2	71.5	29293
	Separated/deserted	0.3	60.2	1280	0.2	71.5	29293
Religion	Hindu	0.3	33.0	84212	0.2	65.5	563759
	Muslim	0.1	77.4	13794	0.2	64.6	96450
	Christian	0.9	11.8	2277	0.2	75.1	16624
	Sikh	0.0	100.0	1622	0.1	58.3	11611
	Buddhist, neo-Buddhist	0.0	NC	958	0.0	20.9	6465
	Jain	0.0	NC	163	0.2	100.0	1263
	Other	0.6	100.0	386	0.0	100.0	3513

Source: NFHS-4 India 2015-16 (2017); pp: 354-357, Note: NC= no cases

Table 4 suggests that prevalence of cancer is higher among men than women. Among women, the prevalence of cancer is uniformly distributed in all age groups. However, the pattern of treatment of cancer shows great diversity. Among men the age group 20-34 is witnessing highest prevalence of treatment

(47.4%). Contrary to this, among women the age group 35-49 is finding the highest prevalence of treatment (73.8%). In terms of residence, the data as given in the table suggests that the prevalence of cancer is higher among men than women in both urban and rural areas. The prevalence of cancer is equally distributed for men in urban and rural as well as for women in both the areas. However, the pattern of treatment of cancer shows diversity. In rural areas the prevalence of treatment is higher among men (44.1%) and in urban areas the prevalence of treatment is highest among women (70.3%). Further, according to the marital status of the respondents the data shows that the prevalence of cancer is higher among men than women in all categories. Among men, prevalence of cancer is higher among those who are currently married and widowed/divorced (0.3%) than those who have never married (0.2%). Likewise, among women the prevalence of cancer is higher among those who are currently married or widowed/divorced (0.2%) than those who have never married (0.1%). However, the treatment sought for cancer is witnessing higher percentage among widowed/divorced men and women with (60.2%) and (71.5%) respectively. Likewise, by the religion of the respondents, the prevalence of cancer is highest among men belonging to Christianity while cancer prevalence is almost equally distributed among women following different religions. The data suggest that there are great variations with regard to prevalence of treatment patterns of cancer among different religious groups which is highest among the men of Sikh religion and among the women of Jain religion.

Table 5: Men and women having cancer seeking treatment in terms of schooling, caste and wealth index

Background characteristic	Men			Women			
	Percentage with cancer	Percentage with cancer who have sought treatment	Number of respondents	Percentage with cancer	Percentage with cancer who have sought treatment	Number of respondents	
Schooling	No schooling	0.3	49.1	12423	0.2	62.9	193100
	<5 years complete	0.2	63.1	6171	0.1	79.0	40496
	5-7 years complete	0.3	41.7	14730	0.2	61.7	99679
	8-9 years complete	0.2	47.5	21420	0.2	66.3	116635
	10-11 years complete	0.3	20.1	18031	0.2	64.1	99600
	12 or above	0.3	26.0	30636	0.2	69.8	150177
	SCs	0.3	35.5	20498	0.2	63.9	142611
Caste	STs	0.2	55.7	9130	0.2	60.5	64132
	OBC	0.3	23.0	45116	0.2	61.6	303910
	Other	0.1	73.3	28296	0.2	73.8	184542
	Don't know	0.5	0.0	371	0.0	100.0	4492
Wealth index	Lowest	0.3	71.2	15202	0.2	54.7	123992
	Second	0.2	49.8	19401	0.2	61.2	136880
	Middle	0.3	19.1	22049	0.2	52.0	143841
	Fourth	0.3	15.7	22932	0.2	77.2	148020
	Highest	0.2	35.1	23827	0.2	83.0	146954

Source: NFHS-4 India 2015-16 (2017); pp: 354-357

Table 5 depicts the alarming revelations about the prevalence and

treatment of cancer in terms of schooling, caste and the wealth index of the respondents. The data show that the prevalence is generally increasing (with some fluctuation) with schooling among men, which is highest among those who have completed 12 or more years of schooling (0.3%) while it is lower among those who have below 5 years schooling (0.2%). However, among women of all stages of schooling prevalence of cancer shows minor variations with 0.1% among those who have below 5 years schooling and 0.2% among those who have more than 12 years of schooling. However, there is great diversity with regard to prevalence of treatment sought for cancer among all groups with highest among those who have less than 5 years schooling among men (63.1%) and lowest among those with 10-11 years complete schooling (20.1%). Likewise, among women the prevalence of treatment is higher among those who have below 5 years schooling (79.0%) and lowest among those who have 5-7 years of complete schooling (61.7%). By the caste group of the respondents the prevalence of cancer is higher among men than women in India. The group which has not revealed about caste identity, among men, is witnessing higher prevalence of cancer (0.5%) followed by SCs (0.3%), OBC (0.3%), STs (0.2%) and others (0.1%). However, among women the prevalence of cancer is witnessing equal distribution (0.2%) among different caste groups except those who do not reveal about their caste witnessing 0.0% prevalence. The table further reveals that the prevalence of treatment is witnessing major variations among all caste groups which is highest among those who have reported other caste (73.3%) followed by STs (55.7%), SCs (35.5%), OBCs (23.0%) and 0 percent among those who do not know about their caste group in case of men while as among women the group which does not know about its caste is witnessing highest treatment prevalence closely followed by others (73.8%), SCs (63.9%), OBC (61.6%) and STs (60.5%). Among men, the prevalence of cancer is higher in lower, middle and fourth wealth index group whereas among women it is uniformly distributed. However, with regard to treatment, there are major variations among men and women in all wealth indexes which is highest among men belonging to the lowest wealth index (71.2%) and among women treatment prevalence is highest among highest wealth index category (83.0%).

Conclusion

To conclude, it can be said that cancer is one of the leading causes of mortality and morbidity worldwide. Globally, cancer burden is increasing alarmingly by incidence, mortality as well as by prevalence. There are variations of types and incidence of cancer in between and within the world regions due to geographical variation, socioeconomic conditions, behavioral patterns and lifestyle related factors. India is a country known for its geographic, social, cultural, religious and economic diversity. The diverse nature of Indian society has a major impact on the variations of different cancer sites. A careful reading of the above discussion in this paper clearly indicates an increasing number of cancer burden in India which is estimated at over 1.1 million new cases and

0.78 million deaths in 2018 suggesting an alarming rise in this devastating disease in India. This calls for early detection policies and efficient prevention strategies implemented throughout the country without any socioeconomic disparities. Overall top six cancer types can be reduced by adopting preventive measures, screening, early detection and quality treatment at early stages. The NFHS-4 report provides awakening revelations about cancer prevalence and its treatment among men and women with respect to several background characteristics. The report reveals that the total prevalence of cancer among men and women aged 15-49 is 0.3 and 0.2 percent respectively in India. Further, according to the data the background factors significantly associated with cancer prevalence in India are age, residence, religion, education, marital status, caste, and wealth index of the people.

India has 60-70 percent preventable cancer burden which could be prevented by properly strengthening the country's public health system. Cancer awareness and screening programs along with avoidance of predisposing factors such as alcohol for respiratory and gastric cancers, tobacco for lip oral cavity and lung cancers, diet and weight for colorectal cancers. Tobacco control laws and programs need to be implemented across the country to reduce the ever growing incidence and mortality due to preventable cancers. Consumption of more vegetables and fruits, regular physical activity, nutrition and weight control are some of the important preventive strategies. Cancer registration should be made mandatory in India acting as a source of information regarding country's cancer related incidence, prevalence, morbidity, mortality data, and for better monitoring, evaluation, and effectiveness of national health programs in cancer. The paper suggests that the rising burden of cancer in India is not the outcome of any single factor instead there are hidden socio-cultural trajectories that need special attention in research and policy formulation. There is dire need of awareness to be created among the public about the cancer havoc and its prevention. Appropriate and integrated cancer control programs with aim of cancer awareness education and screening test should be started by Government and NGOs to reduce the incident rate and increase survival of cancer affected people.

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RECEIVED: 09TH SEP 2021

REVISED: 24TH NOV 2021

ACCEPTED: 10TH DEC 2021



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