International Journal of Research in Social Sciences
Vol. 10 Issue 04, April 2020
ISSN: 2249-2496 Impact Factor: 7.081
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate as well as in Cabell's Directories of Publishing Opportunities, U.S.A

An Overview of the Lifestyle Patterns and Cancer in India

Akhter Hussain Bhat

Abstract

Cancer is the second leading cause of death worldwide. About 1 in 6 deaths is due to cancer. Cancer is caused by the tendencies and the triggers. Tendencies refer to hereditary or genetic factors while the triggers can arise from the environment, from one's lifestyle or from some virus. The lifestyle factors include smoking, improper diet, alcohol, infections, physical inactivity and so on. According to the Cancer Foundation of India (CFI), Kolkata, 60-70 per cent cancer cases in India are lifestyle oriented. This paper is an analytical and descriptive one. It seeks to describe the role of lifestyle patterns in the causation of cancer in India. The work is based on secondary data.The findings indicate that of all cancer related deaths, almost 25-30% is due to tobacco, 30-35% is linked to diet, about 15-20% is due to infections and the remaining percentage is due to other factors.In India more than 1 million new cases of cancer are diagnosed every year. 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, the specific socioeconomic patterns and bio-cultural factors necessitate exploring other causation trajectories. Research reveals that unhealthy diet, tobacco use, alcohol and drug consumption, low physical activity are responsible for 8, 4.8, 2.5, 0.8 per cent cancer causation in India respectively.Unhealthy lifestyles make a significant contribution to ill health and mortality. Increased public awareness of the links between lifestyles and cancer is the need of the hour as it might help people understand the health consequences of their actions and encourage them to make much needed lifestyle changes.

Key words: Cancer, Environment, Lifestyles, Public health, Tendencies, Triggers

1Research Scholar, Department of Sociology, Aligarh Muslim University, Email: hussainakhter078@gmail.com

INTRODUCTION

Chronic non-communicable (NCDs), diseases are assuming increasing importance in both the developed and developing countries. Cardiovascular diseases and cancer are at present the leading causes of death in developed countries. The prevalence of chronic disease is showing an upward trend and for several reason this trend is likely to increase. For one reason, life expectancy is increasing in most countries and a greater number of people are living to older ages, and are at greater risk for chronic diseases of various kinds. For another, the lifestyles and behavioral patterns of people are changing rapidly, these being 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, p. 391). The World Health Organization estimates that a total of 57 million deaths occurred worldwide during 2016. Of these, 41 million were due tonon-communicable(NCDs), principally cardiovascular diseases, cancer and chronic respiratory diseases. The leading causes of NCD death in 2016 were cardiovascular diseases (17.9 million deaths or 44 per cent of NCD deaths), cancers (9 million deaths or 16 per cent of NCD deaths), respiratory disease, including asthma and chronic obstructive pulmonary disease (3.8 million or 9 per cent of NCD deaths), and diabetes (1.6 million or 4 per cent of NCD deaths)[1](WHO, 2018; Park, 2019, p. 391). Reducing the global burden of non-communicable diseases is an overriding priority and a necessary condition for sustainable development (WHO, 2014).Developing countries are now warned to take appropriate steps to avoid the epidemics of non-communicable diseases likely to come with socioeconomic and health developments (Park, 2019, p.391).

Among various non-communicable diseases, cancer is emerging as the most dreaded disease worldwide. Cancer appears to have a unique place in the spectrum of human diseases. Cancer is so dreadful that it often brings about tremendous psycho-trauma, social distress and misery, not only to the victim, but to his/her family as well. Cancer develops when normal cells in a particular part of the body begin to grow out of control. It is a process of uncontrolled cellular growth that can manifest in over 200 different ways (Buckman, as cited in Bhat et al, 2013, p. 50) According to Park (2015) cancer is a group of diseases characterized by an abnormal growth of cells, able to invade adjacent tissues

[1] WHO. (2018). *Non-communicable Disease, Country Profile*. Retrieved Oct 13, 2019 from https://www.who.int/nmh/publications/ncd-profiles-2018/en/ at 4:47 pm

and even distant organs, and the eventual death of the affected patient if the tumor has progressed beyond that stage when it can be successfully removed.

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 (Bhat et al, 2013). 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 et al, 2013). 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. The environmental attributes influence our health and illness in many ways. Evidence indicates that the predominant contributor to many types of human cancers is the environment accounting for about 80-90 percent of cancer cases (Park, 2015, p. 384; Anand et al, 2008, p. 2097).

Of the external factors, the lifestyle factors which include smoking, improper diet, alcohol, infections, and physical inactivity, stress, and sun exposure (Anand et al, 2008; Irigaray et al, 2007, p. 641; McCormack &boffetta, 2011, pp. 2349-50) are considered as the major contributor for cancer incidence in any society including India. According to the Cancer Foundation of India (CFI), Kolkata, 60-70 per cent cancer cases in India are lifestyle oriented.[2]

Lifestyles:

Lifestyle is a concept often used in research and debate on health and health-related behaviors. It is commonly used in the social and behavioral sciences. In addition, lifestyle is also a common expression in everyday parlance. Though hardly ever stated clearly, the general usage of 'lifestyle' in the field of health refers to individual behaviors and the 'way of living' people adopt (Korp, 2008: 18) or lifestyles are the patterns of action that differentiate people from one another (Chaney, 1996: 4).According to Cockerham (2016)**,** **"**health lifestyles are collective patterns of health-related behavior based on choices from the options available to people according to their life chances" (p. 146). Abel describes health lifestyles as patterns of health related behavior, values, and attitudes adopted by

[2]http://www.cancerfoundationofindia.org/cancer-information/combat-cancer/pdf/Lifestyle%20&%20Cancer.pdf Retrieved Oct 3, 2019; 5:37 PM

groups of individuals in response to their social, cultural and economic situation (Abel, as cited in Akram, 2014, p. 49). A person's life chances are largely determined by his or her class position that either enables or constrains health lifestyle choices. The behaviors that are generated from these choices can have either positive or negative consequences on the body and mind, but nonetheless form an overall pattern of health practices that constitute a lifestyle. For most people, healthy lifestyles involve daily decisions about food, exercise, relaxation, personal hygiene, risk of accidents, coping with stress, smoking, alcohol and drug use, as well as having physical checkups(Cockerham, 2016, p. 146). Sociological position on lifestyles is frequently attributed to Max Weber, who considered that while choice is the major factor in the operationalization of a lifestyle, the actualization of choices is influenced by life chances. Life chances are the chances that people have because of their position in life. This includes factors such as gender, age, education, employment, income, and property as well as rights, norms, and social relationships. Hence, lifestyles are not random behaviors unrelated to structure, but are typically deliberate choices influenced by life chances (Akram, 2014, p. 49). Thus, from a sociological point of view, lifestyles are not mere individual choices independent of the influence of various social factors rather lifestyle factors and lifestyles are constrained by material resources in addition to cultural and symbolic values of a particular society. Situated with this background the present study aims to describe the role of health related lifestyles in the causation of cancer in India.

METHODOLOGY:

This paper is an analytical and descriptive one. The work is based on secondary data. The data is taken from various sources like GLOBOCAN (2018), NFHS-4 (2015-16), India: Health of the Nations' States Report (2017) and several other published papers. GLOBOCAN is an online accessible database produced by International Agency for Research on Cancer (IARC) and provides estimates of incidence and mortality for all cancer sites combined worldwide,the National Family Health Survey (NFHS-4) report 2015-16 is the fourth in the NFHS series conducted by International Institute for Population Sciences, Mumbai from 20 January 2015 to 4 December 2016 by 14 field agencies and gathered information from 601,509 households, and the India: Health of the Nation's States Report which provides information with regard to burden of various diseases in Indian states is collectively prepared by Indian Council of Medical Research

(ICMR), Public Health Foundation of India (PHFI) and the Institute for Health Metrics and Evaluation (IHME).

FINDINGS AND DISCUSSION:-

Magnitude of Cancer- India:

Cancer continues to be a leading cause of death worldwide. Seventeen million new cases are expected worldwide by 2020 (Asthana et al, 2016, p.154). In all the countries a major portion of the population die annually because of cancer, which is posing a great challenge to health related practitioners and academicians. Cancer is growing problem in India where it is taking more of a toll of the population. Cancer can have profound social and economic consequences for people in India, often leading to family impoverishment and social inequity(Mallath et al., 2014).It is revealed that more than 1 million new cases of cancer are diagnosed every year in a population of 1.21 billion(Mallath et al., 2014). The International Agency for Research on Cancer GLOBOCAN project estimates suggests 1157294 new cancer cases with 784821 cancer deaths in India in 2018. It further provides data on the number and percentage of different cancers being observed among both sexes in present day India. These various cancers are shown in Table 1 given below:

Table 1: Major forms of cancer found in India among both sexes for all ages in 2018

Males			Females		
Cancer type	**Cases**	**Percentage**	**Cancer type**	**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 fact sheets, 2018.

India continues to have a rising incidence of cancer cases, among both sexes of all ages. Researches reveal that India's cancer burden will nearly double in the next 20 years from over a million new cases in 2012 to more than 1.7 million by 2035 (Mallath et al, 2014, p. 1; Ferlay et al, 2015, pp. 359-86; Goswami et al, 2019). In its projections, the Indian council of medical research (ICMR) said that India is likely to have over 17.3 lakh new cases and over 8.8 lakh deaths due to cancer by 2020 with cancers of breast, lung and

cervix topping the list[3](Gangil et al, 2017). The National Family Health Survey (NFHS-4) report 2015-16, the fourth in the NFHS series, provides information about the prevalence patterns for cancer and its treatment among men and women aged 15-49 on various background characteristics like age, residence, marital status, schooling, religion, and caste and wealth index. The data reveal that there is 0.2% (N=699686) prevalence of cancer among women aged 15-49 and 65.6% (N=699686) with cancer have sought treatment for it. Further, the data show that 0.3% (N=103411) of men aged 15-49 have reported to be with cancer and 34.6% (N=103411) of them have sought treatment for it. The India: Health of the Nation's States Report- the India State-Level Disease Burden Initiative (2017), states that cancer is the third leading cause of death in India after cardiovascular diseases and chronic respiratory disease accounting for 8.3% of the total 61.8% deaths caused by non-communicable diseases. 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; Ali et al, 2011; Mohan et al, 2018), the specific socioeconomic patterns and bio-cultural factors necessitate exploring other causation trajectories of cancer in India.

Lifestyles and Cancer in India:

Dietary habits: Among different environmental and lifestyle factors dietary habits are regarded as important risk of cancer development. Wiseman in 1676, suggested that cancer might arise from an error in diet and he recommended restriction of salt and foods rich in meat as a means of cancer prevention (Abdulla & Gruber, 2000). Scientists have identified for almost 50 years that the incidence of cancer in humans can be affected by what they are given to eat (Stoll, 1989, p. 33). The extent to which diet contributes to cancer incidence varies a great deal according to the type of cancer (Anand et al, 2008; Willet, 2000).Studies claim that about 40% of male cancers and 60% of female cancers in the US can be attributed to diet and suggest that dietary modifications might result in a 35% reduction of cancer deaths(Haslett et al in Stoll, 1989: 33). In India dietary risks, which include diets low in fruit, vegetables, and whole grains, but high in salt and fat, are responsible for about 8 per cent of cancer burden (ICMR, 2017). The Indian diet is a unique one owing to its diversity, cultural and religious practices. Diet in India is a mixture of both cancer causing and cancer preventing agents. The various spices and foodstuffs like turmeric, cumin,

[3]https://www.indiatoday.in/pti-feed/story/over-17-lakh-new-cancer-cases-in-india-by-2020-icmr-610839-2016-05-18.Retrieved OCT 22, 2019 at 11:3 AM

4 ICMR, (2019). *Media report (2 February to 8 February 2019) (ICMR IN NEWS).*Retrieved OCT 22, 2019 from https://www.icmr.nic.in/sites/default/files/ICMR_News_1.pdf at 11:15 am

chilies, Kalakhar, Amrita Bindu have been found to have cancer preventive properties (Sinha et al, 2003). Vegetarian diet, forming the major diet of Indians has been found to be associated with lower cancer risk (Gandhi et al, 2017; Rajaram et al, 2000). Despite this, there are diets that become major risks for cancer causation in India. The deep fried cooking, dried fish, diets high in salt and fat, spicy foods have been implicated in causation of stomach cancer in India (Mathew et al, 2000; Rao et al, 2002). The betel quid chewing, sun dried vegetables, chilies and spicy foods have been associated with carcinoma esophagus. There is a high risk of oral cavity cancers in people who consume meat (processed and fried) two or more times a week (Gandhi et al, 2017; Rajkumar et al, 2003). The common forms of cancer caused by dietary risks are colorectal, prostate, bladder, breast, gastric, stomach and oral cancers.

Tobacco use: Tobacco use is defined as the use of any tobacco product in either smokedor smokeless form**.** Tobacco use is presently one of the principal causes of avoidable deaths in the world.Risks to health result not only from direct consumption of tobacco, but also fromexposure to second-hand smoke. Tobacco use increases the risk of cardiovascular disease, cancer, chronic respiratory disease, diabetes and premature death. Globally, 6 million people die each year as a result of diseases resulting from tobacco consumption.[4]Tobacco use in its various forms, for example smoking, chewing, secondhand is one of the foremost preventable lifestyle causes of cancer worldwide. Worldwide, 31 per cent of cancer deaths in men and 10 per cent among women are attributed to tobacco use in its various forms(Mathur et al., 2014). It has been estimated that, cigarette smoking alone is responsible for one million premature deaths each year in the world (park, 2015, p.385). In India consumption of tobacco, including smoking, smokeless and secondhand smoke contributes to 4.8 (approx) percent of the cancer burden (ICMR, 2017).The incidence of tobacco related cancers varies widely as per geographic location and gender in India. The data in three-year report of population based cancer registries released by ICMR in March 2016 reveal that 30–60 per cent of total cancers among males and 10–30 per cent among females are tobacco related. 1 in 17 males and 1 in 50 females have a lifetime risk of tobacco related cancers in India.[5]The various cancers caused by the use of tobacco are head and neck (oral cavity, nasal cavity, paranasalsinuses,

[4]WHO Global Status Report on NCDs 2014. Report of the Working Group on Disease Burden proposal for 12th Five Year Plan

[5] ICMR, (2016). Three year report of population based cancer registries 2012-2014 retrieved on NOV 03, 2019 from http://ncdirindia.org/NCRP/ALL_NCRP_REPORTS/PBCR_REPORT_2012_2014/index.htm at 5:15 PM

nasopharynx, larynx),esophagus, stomach, colorectal, pancreatic, bladder, kidney, cervical, leukemia and, lungs (Ghandhi et al, 2017, p. 12).

Alcohol: Harmful use of alcohol has adverse health consequences. There is a causal relationship between the excessive consumption of alcohol and development of various infectious and noninfectious diseases. According to WHO (2014), in 2012, an estimated 3.3 million of all deaths worldwide were attributable to alcohol consumption. More than half of these deathsresulted from NCDs – chiefly cardiovascular diseases and diabetes (33.4%), cancers(12.5%) and gastrointestinal diseases, including liver cirrhosis (16.2%).[6] High levels of alcohol intake are directly associated with various types of cancers in both men as well as in women like the cancers of themouth, nasopharynx, oropharynx, larynx, esophagus,colon, rectum, liver and the breast. Excessive intake of alcohol is a major risk factor associated with esophageal cancer, liver cancer, colon, rectal cancer and female breast (Park, 2015, p. 385). In India, alcohol and drug intake is a major risk factor for cancer occurrence. As per an estimate by WHO, in India 30 per cent of the total population consumed alcohol as compared to global figures of 38.3 per cent resulting in a number of cancers as described above. The Indian Council of Medical Research (2017) estimates that 2.5 per cent of cancer burden is due to alcohol and drug intake. Further studies reveal that alcohol consumption is responsible for Gingival (2.62%), esophageal (2.33%) and laryngeal (2.58%) cancers in India (Ghandhi et al, 2017).

Low physical activity: According to World Health Organization (2014), insufficient physical activity is one of the ten leading risk factors for the global mortality, causing some 3.2 million deaths each year.[7] Peoplewho are insufficiently physically active have a 20−30 percent increased risk of all-cause mortality compared to those who do at least 150 minutes of moderate- intensity physical activity per week, as recommended by WHO. Regular physical activity reduces the risk of ischemic heart disease, stroke, diabetes and breast and colon cancer.[8]Additionally, it is a key determinant of energy expenditure and is therefore fundamental to energy balance, weight control and prevention of obesity. A sedentary lifestyle is associated with most chronic illnesses. Being physically inactive is associated with occurrence of various cancers and cancer related mortality like the breast, colon, rectum, liver, endometrium, esophagus, kidney, prostate, and pancreas (Booth et al, 2002; Anand et al, 2008).According to the American Cancer Society lack of physical activity and

[6] WHO Global Status Report on NCDs 2014
[7] WHO Global Status Report on NCDs 2014
[8] https://www.who.int/gho/ncd/risk_factors/physical_activity_text/en/ retrieved on 25/03/2019

excess body weight is responsible for an estimated 3.9 percent of all cancers in the world.[9] In India, 0.8 (approx) per cent cancer burden is attributed to high body mass index due to low physical activity (ICMR, 2017).

Occupational risks: Evidence suggests that 1 to 5 per cent of all human cancers are due to occupational exposures (Park, 2015, p. 385). The common environmental and occupational risks include unsafe water, sanitation, sewage, exposure to different physical and chemical agents in the form of excessive heat, cold, radiation, humidity, asbestos, arsenic chemicals as a result of the work and occupations of the people. People who have certain jobs such as painting, construction, pesticide and petroleum workers have an increased risk of cancer (Parsa, 2012). India: health of the nation's states- the India state level disease burden initiative (2017), attributed 3 per cent of India's cancer burden to occupational risk factors. Different types of cancers are believed to be due to the illeffects of the polluted environment. The risk of lungcancers is increased by a number of outdoor pollutants. Indoor environmental pollutants such asvolatile organic compounds and pesticides increase therisk of leukemia and lymphoma, brain tumors, and germ cell tumors. Anincreased risk oflymphoma, leukemia, colorectal, and bladder cancer has been observed in peopleusing chlorinated water for drinking purposes for a longtime. Besides, the lower socio-economic conditions related to poorhygiene, poor diet or infections of viral origin are alsoresponsible for various cancers (Ali et al, 2011: 63).

Some Hidden Trajectories

From the above facts and figures it becomes apparent that India's cancer burden is a mix of various factors, mostly attributed to lifestyle factors of the people. The figures given in the state level disease burden initiative suggest that the estimated number of incident cancer cases in India has increased from 548000 in 1990 to 1069000 in 2016 with cancer related deaths from 382000 in 1990 to 813000 in 2016 (Dhillon et al, 2018: 1292-93). Here it is pertinent to mention that India's disease burden is not only the outcome of observable factors instead there are some invisible trajectories which need to be explored. The policies and planning on the part of government is one of those. According to Akram (2014), health inequalities are the product of the administrative state and its governmentality (p. 209). The health policy in India is heavily dominated by the biomedical model. The government is focused on developing infrastructure for clinical treatment of diseases assuming that diseases are ubiquitous and inevitable. This approach ignores the socio-cultural approaches

[9]http://www.cancer.org retrieved onFeb 13,2019

that regard diseases preventable and health as directly related to food, nutrition, clean water, sanitation, healthy, and hygienic environment, proper living conditions, affordable and accessible health care facilities and an equitable, accountable, and just delivery mechanism (Ibid, p. 218). Second reason and most important for rising incidence of various diseases including cancer is the non-realization of the notion of primary health care as envisaged in Alma Ata Declaration (1978).[10] The declaration states that primary health care reflects and evolves from the socio-cultural, economic, and political conditions of the country, addresses the main health problems in the community, providingpromotive, preventive, curative and rehabilitative servicesand at least includes (i) education concerning prevailing health problems and the methods of preventing and controlling them; (ii) promotion of food supply and proper nutrition; (iii) an adequate supply of safe water and basic sanitation; (iv) maternal and child health care, including family planning; (v) immunization against the major infectious diseases; (vi) prevention and control of locally endemic disease; (vii) appropriate treatment of common disease and injuries; and, (viii) provision of essential drugs. However Akram (2014) believes that the concept of Primary Health Care has neither been understood nor implemented properly in India. The notion of primary health care suggests a mechanism to prevent disease from occurring and further providing local and accessible solutions for the treatment (p.14). The primary health centers that are functioning in present day India are not based on such principles. In a country like India, where health and disease are directly linked to quality of life, especially food, water, nutrition, hygienic living conditions, etc. public health services as conceptually distinct from medical services and meant for reducing a populations' exposureto disease through such activities as assuring food safety and other health regulations, monitoring waste disposal and water systems, and health education to improve personal health behaviors and build citizen demand for better public health outcomes (Akram, 2014; Gupta, 2006) is an urgent need of the hour. People at younger age need to be educated to spend more on basic health goods like nutrition, food, and sanitation so that they are not compelled to spend more on treatment of disease at a later stage. This will help in building sustainable lifestyles. Not of less importance, the study of the prevailing disease patterns and their socio-cultural causation needs special attention. An absolute medicalization of health is a big threat for the society. A comprehensive paradigm, taking

[10]The Declaration of Alma Ata (1978). Report of the international conference on Primary health Care, Alma-Ata, USSR, 6-12 September, 1978. Retrieved Nov 10, 2019 from https://www.unicef.org/about/history/files/Alma_Ata_conference_1978_report.pdf

into consideration the grounded realities and spatial/social variation is of utmost importance to reduce the burning trend of various diseases including cancer.

CONCLUSION

Unhealthy lifestyles make a significant contribution to ill health and mortality. Increased public awareness of the links between lifestyles and diseases is the need of the hour as it might help people understand the potential health consequences of their actions and encourage them to make much-needed lifestyle changes. Efforts are needed to improve public health messages about how lifestyle risk factors impact the occurrence and development of various diseases (Sanderson et al, 2009). Public health initiatives with regard to the education of the individual in the principles of personal hygiene might help to a large extent in the modifications of commonly adopted lifestyles with regard to diet. An important part of public healthdeals with prevention and risk reduction strategies and the contributionthese can make towards the improvement of health.It focuses both on individualsand on entire populations or groups and one of its functions is to enhance health by preventing disease before it strikes (Earle et al, 2007). Thus, public health can control the life style related factors in the causation of cancer.

References

Akram, M. (2012). Looking beyond the universal health coverage: health inequality, medicalism and Dehealthism in India. *Public health research,* 2(6). 221-228.

Akram, M. (2014). *Sociology of health.* Jaipur: Rawat publication.

Ali, I., Wani, W. A., & Saleem, K. (2011). Cancer Scenario in India with Future Perspectives. *Cancer Therapy*,8, 56–70.

Aly, H. F. (2012). Dietary habits and relation to cancer disease in different population. *Archives in Cancer Research*, 1 (1:2), 1-26.

Anand, P., Kunnumakare, B. A., Sundaram, C., Harikumar, B. K., Tharakan, T. S., Lai, S. O., Sung, B., Aggarwal, B. B. (2008). Cancer is a preventable disease that requires major lifestyle changes. *Pharmaceutical Research*, 25 (9), 2097-2115.

Bray, F., Ferlay, J., & Soerjomataram, I. (2018). Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. https://doi.org/10.3322/caac.21492.

Bhat, V., & Bhat, N. (2013). *Mycancer is me: the journey from illness to wholeness.* India: Hay House.

Buchanan, N. D., Houston, K. A., & Richardson, L. C. (2015). Promoting Health of Cancer Survivors. *American Journal of Preventive Medicine*, 49 (6), S467–S469. https://doi.org/10.1016/j.amepre.2015.08.006

Booth, F. W., Chakravarthy, M. V., Gorden, S., &Spangenburg,E. E. (2002). Waging war on physical inactivity: using modern molecular ammunition against an ancient enemy. *J ApplPhysiol*, 93: 3–30.

Cockerham, W. C. (2016). *Medical Sociology.* (13th ed.). New York: Routledge.

Chaney, D. (1996). *Lifestyles.* London: Routledge.

Earle, Sarah; Lloyd, Cathy E; Sidell, Moyra; Spur, S. (2007). *Theory and research in promoting*
Public health. London: Sage publications.

Gangil, T., &Prajwal, Sneha. (2017). Prediction of breast cancer using mammogram images by
Data mining on the extracted features of the processed image. *International Journal of Innovative Research in Computer and Communication Engineering*, 5 (6), 9485–9501.

Gandhi, A. K., Kumar, P., Bhandari, M., Devnani, B., Rath, G.K. (2016). Burden of preventable cancers in India: Time to strike the cancer epidemic. *Journal of Egyptian National Cancer Institute*, 29, 11-18.

Irigaray, P., Newby, J. A., Clapp, R., Hardell, L., Howard, V., Montagnier, L., Epstein, S., Belpomme, D. (2007). Lifestyle-related factors and environmental agents causing cancer: An overview. Biomedicine & Pharmacotherapy, 61, 640-58.

Mallath, M. K., Taylor, D. G., Badwe, R. A., Rath, G. K., Shanta, V., Pramesh, C. S., Sullivan, R. (2014). The growing burden of cancer in India: Epidemiology and social context. *The Lancet Oncology, 15* (6), 1–8. https://doi.org/10.1016/S1470-2045(14)70115-9
Korp, P. (2008). The symbolic power of healthy lifestyles. *Health Sociology Review*, 17 (1), 18-26.

McCormack, V. A., &Boffetta, P. (2011). Today's lifestyles, tomorrow's cancers: trends in lifestyle risk factors for cancer in low- andmiddle-income countries. Annals of Oncology, 22 (11), 2349-2357.

National Family Health Survey (NFHS 4) 2015-16: report India and 29 states- (2017) Government of India- Ministry of Health and Family Welfare, Mumbai International Institute for Population Sciences.

Park, k. (2019). *Preventive and social medicine.* (25th ed.). Jabalpur: BanarsidasBhanot.

Rajaram S, Sabate J. (2000). Health benefits of a vegetarian diet.*Nutrition*, (16): pp. 531–3.

Mathew A, Gangadharan P, Varghese C, Nair MK. (2000). Diet andstomach cancer: a case-control study in South India. *EUR J Cancer Prev*, (9): pp. 89–97.

Rajkumar T, Sridhar H, Balaram P, Gajalakshmi V, VaccarellaS, Nandakumar A, et al. (2003). Oral cancer in Southern India: theinfluence of body size, diet, infections and sexual practices. *Eur J Cancer Prev*, 12(2): pp. 135–43.

Sinha R, Anderson DE, McDonald SS, Greenwald P. (2003). Cancerrisk and diet in India. *J Postgrad Med;*49(3): pp. 222–8.

Terris, M. (2019). Epidemiology and the Public Health movement. *Journal of Public Health Policy*, 8(3), 315–329.

Indian council of medical research, public health foundation of India, and institute for health matrics and evaluation. (2017). *India: health of the nation's states- the India state level disease burden initiative.* New Delhi, India. Retrieved NOV 10, 2018 from https://www.healthdata.org/sites/default/files/files/policy_report/2017/India_Health_of_the_Nation%27s_States_Report_2017.pdf.

The Declaration of Alma Ata (1978). Report of the international conference on Primary Health Care, Alma-Ata, USSR, 6-12 September, 1978. Retrieved Nov 10, 2019 from https://www.unicef.org/about/history/files/Alma_Ata_conference_1978_report.pdf

WHO. (2018). *Non-communicable Disease, Country Profile*. Retrieved Oct 13, 2019 from https://www.who.int/nmh/publications/ncd-profiles-2018/en/ at 4:47 pm

http://www.cancerfoundationofindia.org/cancer-information/combat cancer/pdf/Lifestyle%20&%20Cancer.pdf Retrieved Oct 3, 2019; 5:37 PM

IARC. (2018). WHO, Global *Cancer Observatory*. Retrieved OCT 13, 2019 from https://www.iarc.fr/wp-content/uploads/2018/09/pr263_E.pdf at 5:30 pm

ICMR, (2019). *Media report (2 February to 8 February 2019) (ICMR IN NEWS).*Retrieved OCT 22, 2019 from https://www.icmr.nic.in/sites/default/files/ICMR_News_1.pdf at 11:15 am

WHO Global Status Report on NCDs 2014. Report of the Working Group on Disease Burden proposal for 12th Five Year Plan