

Patterns of Cancer in India: A Sociological Exploration of Globocan Estimates

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Abstract

In Any Human Society, Epidemiological Data On Cancer Prevalence Patterns Is Critical In Determining The Priorities For Cancer Control Measures. There Are Marked Differences In The Distribution Of Cancer In Different Parts Of The World. This Study Attempts To Explore And Describe The Patterns Of Common Cancers Affecting People In India. It Tries To Look At The Different Types Of Cancer That Affect Men And Women Of Different Ages From A Sociological Point Of View. Being Both Descriptive And Analytical, This Study Provides A Sociological Exploration Of The Most Recent Globocan 2020 Estimates On The Cancer Burden In India. It Also Seeks Help From Other Scholarly Works In Various Forms. The Results Analysed From The Sources Reveal An Estimated 1.32 Million Cases Of Cancer With 0.85 Million Cancer-Caused Deaths Reported In India In 2020, With 2.72 Million Cases As The Five-Year Prevalence Of Cancer. Among All Cancer Types, Breast Cancer (13.5%) Is The Most Common, Affecting Both Sexes Of All Ages, Followed By Lip, Oral Cavity (10.3%), Cervix (9.4%), And Lung (5.5%) Cancers For Incidence, And Cervix (9.1%), Lip, Oral Cavity (8.8%), And Lung (7.8%) Cancers For Mortality. After Thoroughly Discussing The Different Cancer-Causing Factors, The Work Concludes That India's Cancer Burden Cannot Be Attributed To A Single Factor. Instead, Different Latent Socio-Cultural Trajectories Need Particular Research And Policy-Making Attention.

Keywords: Cancer, Globocan, Pattern, Prevalence, Risk Factors, Treatment.

Introduction

Globally, Cancer Is The Most Dreaded Non-Communicable Disease, And It Is Rising Rapidly. The Spectrum Of Human Diseases Appears To Have A Special Place For Cancer Because Of How Terrible Cancer Is. The Victim And Their Family Frequently Experience Substantial Psycho-Trauma, Social Difficulty, And Suffering Due To This Disease (Kakande Et Al., 2001; Iqbal Et Al., 2016). Cancer Develops When Normal Cells In A Particular Area Of The Body Multiply Rapidly. It Is An Uncontrolled Process Of Cellular Development That Can Show In Over 200 Different Ways (Buckman, 1995 Cited In Bhat & Bhat, 2013: 50). In His Textbook On Social And Preventive Medicine, Park (2015: 381) Defines Cancer As “A Group Of Diseases Characterised By An Abnormal Growth Of Cells, Able To Invade Adjacent Tissues And Even Distant Organs, Leading To The Eventual Death Of The Affected Patient If The Tumour Has Progressed Beyond That Stage When It Can Be Successfully Removed.”

Cancer Is A Serious Global Public Health Concern. It Is The Second Most Extreme Cause Of Death Worldwide, Following Cardiovascular Illnesses. Cancer Is The Top Cause Of Mortality Before The Age 70 In 112 Of 183 Nations And Third Or Fourth In 23 Others. Cancer Is Becoming The Main Cause Of Death In Several Countries Due To A Sharp Reduction In Stroke And Heart Disease Deaths (Bray Et Al., 2021; Sung Et Al., 2021). Being The Primary Cause Of Early Death, There Is An Essential Need To Improve The Responsiveness Of The Health Care System To Preventive And Therapeutic Treatments. The Estimates By The International Agency For Research On Cancer (Iarc) Released On December 14, 2020 And Available Online As Globocan 2020, Reveal That The Global Burden Of Cancer Has Risen To 19.3 Million Cases And 10 Million Cancer Deaths In 2020, As Compared To 18.1 Million Cases And 9.6 Million Deaths In 2018. According To Estimates, One In Every Five People Will Develop Cancer During Their Lifetime, And One In Every Eight Men And One In Every Eleven Women Will Die From The Disease. The Figures Suggest That More Than 50 Million People Live Within Five Years Of A Cancer Diagnosis (Globocan World Fact Sheet, 2020). The Data Show That Breast Cancer Has Surpassed Lung Cancer In Incidence For Both Sexes And All Ages, While Lung Cancer Is Still The Number One Cause Of Cancer Deaths.¹

Many Causes Appear To Be Driving This Growth Globally, Primarily The Rising And Ageing Population, As Well As Greater Exposure To Cancer Risk Factors Associated With Social And Economic Development. The Statistics Imply That Malignancies Associated With Lifestyles More Common In Industrialised Countries Are Replacing Those Associated With Poverty Or Infection.² There Are Still Big Differences Between Countries With High And Low Incomes. Globocan 2020 Predicts That By 2040, Countries With A Low Or Medium Human Development Index Will Have The Most Cancer Cases Compared To Other Countries.

Cancer Is A Disease That Can Have Multiple Causes And Lasts For A Very Long Time. According To The Studies That Have Been Done So Far, Two Main Categories Of Elements Contribute To The Development Of Cancer. These Are The Tendencies And The Triggers (Bhat & Bhat, 2013: 51-52). 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 Located Outside The Individual's Body Can Arise From The Environment, Lifestyle, Or Some Virus (Bhat & Bhat, 2013: 52). Most Of The Time, These Outside Factors Are Called "Environmental Factors." They Include Lifestyle, Eating Habits, Infections, Pollution, Workplace Dangers, Smoking, Drinking, Socio-Cultural, Psychological, And Economic Factors, And So On. Environmental Attributes Influence Our Health And Illness In Many Ways. The Environment Appears To Be The Most Significant Contributor To Many Types Of Human Cancers, Accounting For 80–90 Percent Of Cancer Cases (Park, 2015; Anand Et Al., 2008). The Term Environment Here Refers To Everything That Interacts With The Human Body. It Includes All The Biological, Physical, Socio-Cultural, Psychological, And Economic Factors Which Effect Man And Give Course To His Development (Akram, 2013). Lifestyle Factors, Which Include Smoking, Poor Diet, Alcohol, Infections, Lack Of Physical Activity, Stress, Job, And Sun Exposure, Are Thought To Be The Main Causes Of Cancer In Any Society (Ali Et Al., 2011; Anand Et Al., 2008; McCormack & Boffetta, 2011).

¹<https://www.uicc.org/news/globocan-2020-new-global-cancer-data> (Accessed May 22, 2022)

²<https://www.uicc.org/news/global-cancer-data-globocan-2018> (Accessed May 22, 2022)

Cancer patterns differ by country, depending on the level of development. India is experiencing a simultaneous surge in cancer cases due to its rapidly rising economy and changes in lifestyle-related behaviours (Reddy et al., 2005). Due to low to moderate living conditions and inadequate medical facilities, the incidence of cancer on the Indian subcontinent is growing in severity (Ali et al., 2011). Tobacco-related malignancies, such as those of the lips, oral cavity, lung, and oesophagus, are the most prevalent types of cancer among men in India. In contrast, besides tobacco-related cancers, cervical, breast, and ovarian cancers are the most prevalent among Indian women (Bray et al., 2018; Globocan India Factsheet, 2018). Comparing India to other industrialised nations, there are substantial differences in the incidence of certain malignancies. Even within India, there are variances in the prevalence patterns of many types of cancer.

Study Objectives

Situated within the above discussion as the background, this paper attempts to explore and describe the patterns of common cancers in India. It seeks to make a sociological analysis of the various cancer types prevailing among males and females of different age groups. It also provides an overview of the causation trajectory of various cancers.

Research Methodology

Being an analytical and descriptive work in its methodology, this study is primarily based on secondary data. The data used in this paper is taken from various online and offline sources like books, journals, research articles, and government reports of national and international importance. Of major significance, the findings used in this work are based on the prevalence estimates of cancer produced by the International Agency for Research on Cancer in the form of Globocan. Globocan is a database produced by the International Agency for Research on Cancer that is accessible online (IARC). It establishes a global cancer profile by estimating incidence, mortality, and prevalence for all cancer sites worldwide using the most accurate information available in each country. The International Agency for Research on Cancer (IARC) is a component of the World Health Organization (WHO) that encourages international collaboration in cancer research. The Globocan database, which offers estimates of global cancer incidence, mortality, prevalence, and future projections, is routinely updated by the IARC (Bray et al., 2018).

Search Techniques

The data on cancer patterns (incidence, mortality, and prevalence) in India were collected from the International Agency for Research on Cancer's Globocan (2020) database (IARC). The results of Globocan (2020) are accessible at <https://gco.iarc.fr/>. Further data sources for this study were located by searching Google Scholar, PubMed, Science Direct, and references in related journals with the phrases "cancer," "India," "incidence," "mortality," "pattern," "prevalence," "burden," and "risk factors."

Findings and Discussion

The Findings Of This Study Are Discussed Under The Following Headings And Subheadings And Presented With The Help Of Tables And Figures.

Cancer Patterns In India-2020

As A Major Health Issue, Cancer Affects People All Around The World. Because Of Low-To-Moderate Incomes And A Lack Of Accessible Healthcare, The Cancer Epidemic In The Indian Subcontinent Is Growing In Scope And Severity (Ali Et Al., 2011). As Per The Latest Estimates Released By The International Agency For Research On Cancer, There Were Estimated 1.32 (13,24,413) Million Cancer Cases With 0.85 (8,51,678) Million Cancer-Caused Deaths In 2020 In India (Globocan India Factsheet, 2020) Compared To 1.15 Incident Cases Of Cancer And 0.78 Million Cases Of Deaths In 2018 (Globocan India Factsheet 2018). The Five-Year Prevalence Of Cancer Is Estimated To Be 2.72 (27,20,251) Million Cases (Globocan India Factsheet, 2020) Compared To 2.25 Million Cases In 2018. Among All Prevailing Types Of Cancer In India, The Most Frequently Observed cancer Among Both Sexes For Incidence As Well As Mortality Is Breast Cancer (13.5% Of The Total Cases) And Ranks Number One Among All Cancers. The Analysis Reveals That Breast Cancer Is Followed By Cancers Of The Lip, Oral Cavity (10.3%), Cervix (9.4%), And Lung (5.5%) For Incidence And Cervix Cancer (9.1%), Lip, Oral Cavity (8.8%), Lung (7.8%) For Mortality. Table 1 Presents The Overall Summary Of The Major Types Of Cancers In India Among Both Sexes For All Ages. Further, Breast Cancer Is Also Estimated To Have The Highest Five-Year Prevalence, With 459271 (Proportion = 69.28 Per 100000) Cases Followed By Cervix Cancer With 283842 Cases (Proportion = 42.82 Per 100000), And Lip, Oral Cavity Cancers With 300413 Cases (Proportion = 21.77 Per 100000) In India (Table, 2).

It Is Important To Note That, In Terms Of Incidence And Mortality In 2018, Oral Cavity Cancer Came In Second To Breast Cancer. However, In 2020, Cancer Of The Cervix Surpassed The Oral Cavity Cancers In Incidence And Surged To Second Leading Cause Of Death After Breast Cancer. Similarly, Lip And Oral Cavity Cancers Have Exceeded Lung Cancer In Terms Of Mortality And Reached The Third Position In 2020, Surpassing Lung Cancer In 2018.

Gender Wise Cancer Distribution

The Gender-Based Distribution Of The Data Reveals That Among Indian Males, The Most Prevalent Types Of Cancer Include The Lips And Oral Cavities 16 Percent (104661 Cases), Followed By Cancers Of Lung 8 Percent (51675 Cases), Stomach 7 Percent (40686 Cases), Colorectal 6 Percent (40408 Cases), Oesophagus 6 Percent (40183 Cases), And Other Cancers 57 Percent (368417 Cases). Breast Cancer 26 Percent (178361 Cases) Is The Most Often Reported Malignancy Among Indian Females. Here, The Numbers Mirror The Global Prevalence Of Cancer. Following Breast Cancer Among Indian Women Are

Malignancies Of The Cervix 18 Percent (123907 Cases), Ovary 7 Percent (45701 Cases), Lip, Oral Cavity 5 Percent (31268 Cases), Colorectal 4 Percent (24950 Cases), And Others 40 Percent (174196 Cases). The Below-Given Figures 1 And 2 Present The estimates For Cancers In Indian Males And Females By Percentage Share Of Each Cancer Type As Produced By Globocan, 2020.

Table 1: Major Types Of Cancer In India, Both Sexes, All Ages

Type Of Cancer	Cases	Percentage	Deaths	Percentage
Breast	178361	13.5	90408	10.6
Lip, Oral Cavity	135929	10.3	75290	8.8
Cervix Uteri	123907	9.4	77348	9.1
Lung	72510	5.5	66279	7.8
Colorectal*	65358	4.9	38161	4.5
Oesophagus	63180	4.8	58342	6.9
Stomach	60222	4.5	53253	6.3
Leukemia	48419	3.7	35392	4.2
Ovary	45701	3.5	32077	3.8
Nhl**	35828	2.7	20390	2.4
Liver	34743	2.6	33793	4.0
Larynx	34687	2.6	21660	2.5
Prostate	34540	2.6	16783	2.0
Brain	31460	2.4	26656	3.1
Hypopharynx	28489	2.2	11443	1.3
All Cancers	13,24,413	-	8,51,678	-

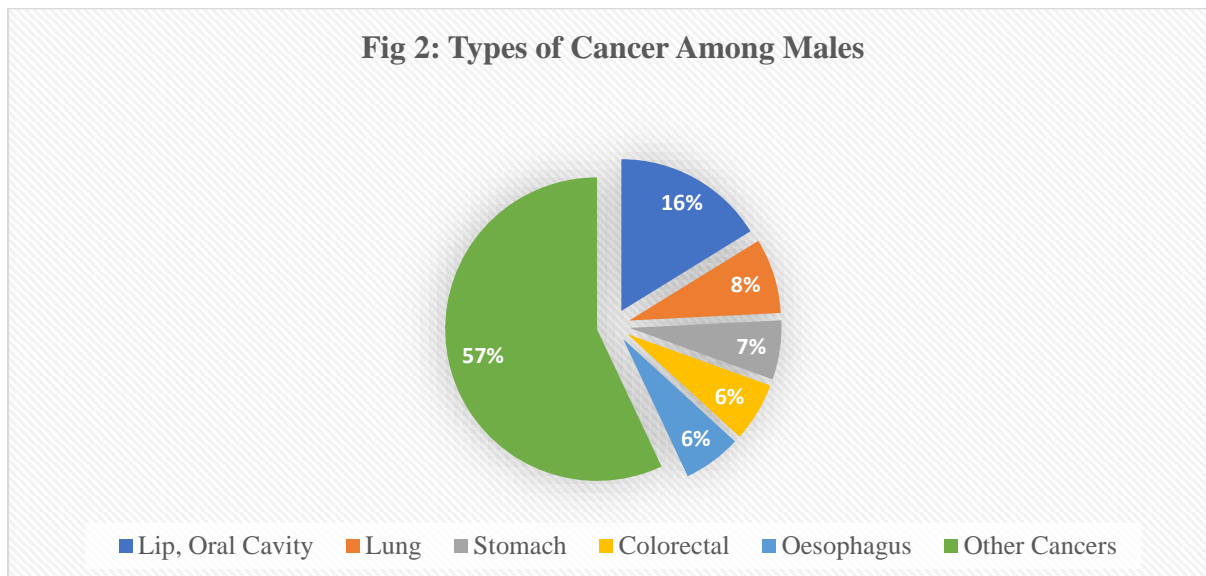
Source: Globocan India, 2020. *Includes Both Colon And Rectal Cancer Cases, **Stands For Non-Hodgkins' Lymphoma

Table 2: Five-Year Prevalence Of Top Ten Cancer Sites In India, Both Sexes, All Ages

S.No	Cancer Type	Cases	Proportion (Per 100000)
01	Breast	459271	69.28
02	Cervix	283842	42.82
03	Lip, Oral Cavity	300413	21.77
04	Ovary	103716	15.65
05	Prostate	67909	9.47
06	Leukaemia	127493	9.24
07	Corpus Uteri	43484	6.56
08	Nhl	88272	6.40
09	Larynx	82087	5.95
10	Stomach	81270	5.89
Total	All Cancer Sites	2,70,251	197.1

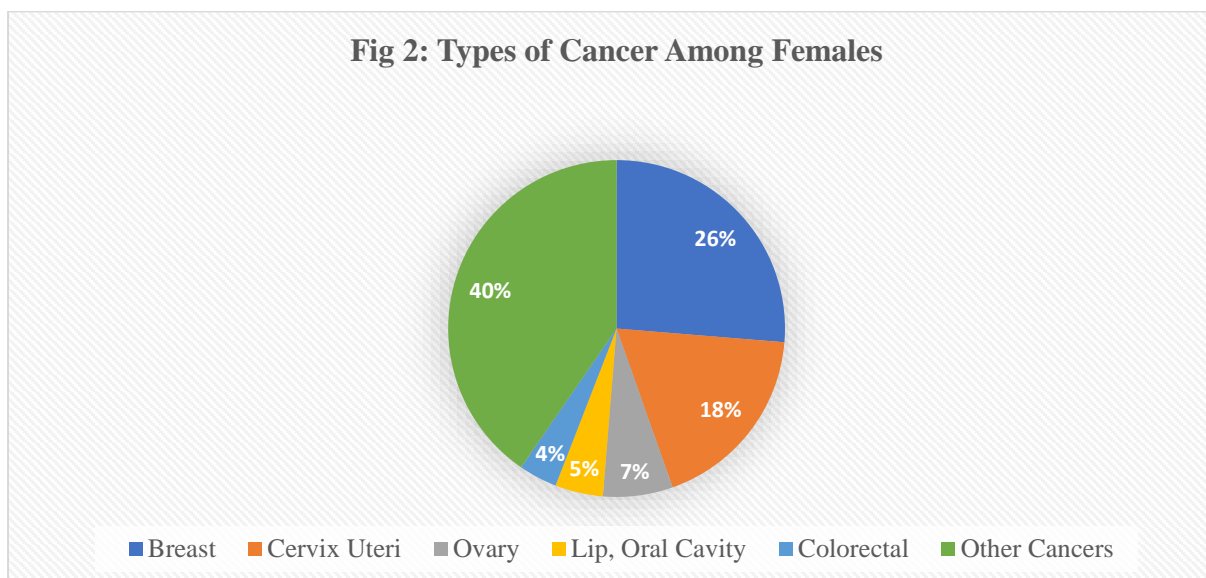
Source: Globocan India, 2020.

Fig 2: Types of Cancer Among Males



Source: *Globocan India, 2020.*

Fig 2: Types of Cancer Among Females



Source: *Globocan India, 2020.*

Causes Of Various Cancers

Based On The Discussion Of Various Scholarly Works, Based On Both Primary And Secondary Data, This Section Provides A Brief Overview Of The Various Causal Factors Which Have Been Held Responsible For The Causation Of Cancer In India. Here, An Attempt Has Been Made To Focus On The Authors' Core Arguments And Reach An Insightful Understanding Of The Trajectory Of Cancer Occurrence In A Socially And Culturally Different Part Of The World I.E., India. According To The World Health Organization (2022),³ Five Major Risk Factors Are Responsible For One-Third Of Cancer Deaths. Tobacco Usage, Alcohol Consumption, Sedentary Living, A High Bmi, And A Low Fruit And Vegetable Intake Are Among These Risk Factors. Tobacco (Smoked Or Smokeless) Is The Leading Cause Of Cancer Development. It Accounts For Nearly 22 Percent Of Cancer Fatalities, With Cancer-Causing Infectious Agents Such As Human Papillomavirus (Hpv) For Cervical Cancer And Hepatitis B Or C For Liver Cancer

³ <https://www.who.int/news-room/fact-sheets/detail/cancer> (Accessed June2, 2022)

Accounting For Up To 30 Percent Of The Cancer Burden In Low- And Lower-Middle-Income Nations (Lmics)(Dar & Sharma, 2019; Forouzanfar Et Al., 2016). Late Presentation, A Lack Of Awareness, And Biased Cancer Care Facilities All Contribute To Poor Cancer Diagnoses In India. Most Malignancies Diagnosed In India Are At Their Later Stages, Making Treatment More Challenging (Takiar Et Al., 2010). Approximately 70 Percent Of Indian Cancers Are Caused By Avoidable Risk Factors, Including Tobacco (40%), Infection (20%), And Others (10%) (Gandhi Et Al., 2017).

As Said, Breast Cancer And Cervix Cancer Which Have Emerged As The Third Most Reported Cancer By Incidence And mortality, Have Been Attributed To Various Internal And External Factors. For Both Of These Cancers, Researchers Have Developed Volumes Of Scholarly Works To Attribute These To Heredity And Genetic, Lifestyle And Dietary Changes, Reduced Physical Activity, Sedentary Living And Increasing Obesity, Increasing Prevalence Of Poverty, Lower Or Higher Socioeconomic Status. The Hpv Prevalence, Early Age At Marriage And intercourse, Lower Parity Or Multiparity, Tobacco Consumption, Early Age At Menarche Or Late Menopause, Infertility, Lack Of Breastfeeding, Urbanization, Lack Of Screening, Lack Of Awareness, Multiple Sex Partners, Early Onset Of Menstrual Periods, Use Of contraceptives, Sexual Behavior Of A Male Partner, Poor Genital Hygiene, Alcohol Intake And So On (Asthana Et Al., 2014; Bobdey Et Al., 2016; Engmann Et Al., 2017; Monica & Mishra, 2020; Sathishkumar Et Al., 2021).

Lung Cancer Is The Fourth Most Frequent Cancer In India For Persons Of All Ages And Both Sexes, According To Globocan (2020) Estimations. It Is The Second Most Prevalent Cancer In Males By Incidence, Behind Malignancies Of The Lip And Oral Cavity. However, It Does Not Rank Among The Top Five Cancers Affecting Women. Smoking And Other Occupational Exposures Are The Leading Cause Of Lung Cancer. Several Studies Have Shed Light On The Correlation Between Lung Cancer And The Use Of Tobacco In Its Many Forms, Such As Cigarettes And Bidis, Particularly Among Indian Males. This Link Has Been Found To Be Strongest In India (Malik & Raina, 2015; Mohan Et Al., 2020).

Cancers Of The Stomach, Intestinal Tract, Oesophagus, And Liver Have Been Linked To Diet As Well As Infections. The Presence Of Helicobacter Pylori Is The Single Most Important Factor In The Development Of Stomach Cancer, Since It Is Responsible For Around 90 Percent Of All Gastric Cancers (Plummer Et Al., 2015). Numerous Studies Have Revealed An Elevated Risk Of Colorectal Cancer With The Consumption Of Processed And Red Meat, Though The Carcinogenic Mechanism Is Unclear (Bouvard Et Al., 2015; Sinha Et Al., 2009). With Every 100 Gm Of Red Meat Consumed Daily And Every 50 Gm Of Processed Meat Consumed Daily, The Risk Of Colon Cancer Rises By 17 Percent And 18 Percent, Respectively (Bouvard Et Al., 2015; Dar & Sharma, 2019). Indian Food Is Unique In Many Ways Because It Comes From So Many Different Cultures. Gastric/Stomach Cancer Is Most Likely To Happen To Both Men And Women Who Eat A Lot Of Deep-Fried And Hot Food With A Lot Of Spices And Food Additives, Dried Fish, And Other Processed Foods (Dikshit Et Al., 2011; Rao Et Al., 2002).

Because It Is The Most Frequent Type Of Cancer In India And Affects A Significant Number Of People Of All Ages, Oral Cavity Cancer Is A Serious Public Health Issue. Individuals With Low Earnings Are The Most Vulnerable Because They Encounter Greater Dangers Than Those With Higher Incomes. Tobacco Usage In Various Forms, Such As Cigarettes, Hookah, Bidi, Mawa, Kharra, Khaini, And Other Tobacco Products, Is A Substantial Risk Factor For Oral Cancer In Both Juvenile And Adult Populations In The Indian Subcontinent (Borse Et Al., 2020; Coelho, 2012; Elango Et Al., 2009; Jayalekshmi Et

Al., 2009; Khan Et Al., 2014; Mallath Et Al., 2014; Sharma Et Al., 2018). Several Forms Of Tobacco Use Have Been Associated With Multiple Anatomical Malignancies. Due To Its Hazardous Effects And Carcinogenicity, It Has Become A Worldwide Menace, Including In India. According To A Recent Analysis Of Cancer In Places Linked To Tobacco Use In 2021, The Estimated Number Of Tobacco-Related Cancers In 2025 Is 427273 (Males 313646 And Females 113627). These Cancers Would Account For 27.2 Percent Of The Total Anticipated Cancer Cases In India (Icmr, 2021).

The Data From Nfhs-4 (2015-16) Reveal That 45 Percent Of Men (N = 105411) And 7 Percent Of Women (N = 699686) Aged 15-49 Use Some Form Of Tobacco. Men Are More Likely To Chew Paan Masala Or Gutkha (15%), Followed By Smoking Cigarettes (14%) And Bidis (13%). The Most Prevalent Types Of Tobacco Use Among Women Include Chewing Paan Masala, Gutkha, Or Paan With Tobacco (2% Each). In Addition To Tobacco Smoking And The Various Other Forms Of Tobacco Use In India, The Other Risk Factors For Oral Cancers Include Areca Nut Consumption, Pan Masala, Opium And Bhang, Alcohol Intake, Human Papillomavirus, Family History, Poor Oral Hygiene, Increasing Age, Male Gender, And Socioeconomic Status (Ali Et Al., 2011; Batra Et Al., 2020; Varshitha, 2015).

Conclusion and Implications

To Summarise The Discussion, Cancer Is One Of The Leading Global Causes Of Mortality And Morbidity. Cancer Incidence, Mortality, And Prevalence Are Rising At An Alarming Rate Worldwide. Due To Geographic Variance, Socioeconomic Conditions, Behavioural Patterns, And Lifestyle-Related Factors, Numerous Forms And Incidences Of Cancer Worldwide Exist. Geographic, Social, Cultural, Religious, And Economic Diversity Characterises India. The Diversity Of Indian Society Considerably Affects The Variances Between Cancer Sites. A Close Review Of The Preceding Section Of This Paper Suggests That The Incidence Of Cancer In India Is Rising, With An Anticipated 1.32 Million New Cases And 0.85 Million Deaths In 2020, Indicating An Alarming Increase In This Fatal Disease In India. Regardless Of Socioeconomic Status, This Necessitates The Nationwide Implementation Of Early Detection Programmes And Effective Prevention Initiatives.

Preventative Measures, Screening, Early Detection, And Effective Treatment At The Earliest Stages Can Lower The Incidence Of The Most Common Forms Of Cancer. India Has An Avoidable Cancer Burden Of Over 60 Percent, Which Could Be Reduced By Boosting The Right Public Health System. It Is Recommended To Avoid Risk Factors Such As Alcohol For Stomach And Lung Cancers, Smoking For Lip, Mouth, And Lung Cancers, And Diet And Weight For Colorectal Cancers. To Lower The Rising Incidence And Mortality Rates Of Preventable Cancers, National Tobacco Control Policies And Programmes Must Be Enacted And Implemented At Grass Root Levels. The Realization Of Primary Health Care, As Envisaged In The Alma Ata Declaration Of 1978, Is To Be Made A Reality. Important Preventive Methods Include Increased Consumption Of Fruits And Vegetables, Regular Exercise, A Healthy Diet, And Weight Management. Mandatory Cancer Registration In India Would Aid In Monitoring, Evaluating, And Assessing The Performance Of National Cancer Health Programmes And Provide Data On The Incidence, Prevalence, Morbidity, And Mortality Of Cancer In The Country. The underlying Socio-Cultural Causation Trajectories Demand Particular Attention In Research And Policy Formulation, As Opposed To A Single Cause For India's Increasing Cancer Burden. Individuals Must Be Informed Of The Destruction Caused By Cancer And How To Prevent It. The Government And Non-Governmental Organisations Should Work Together To Implement Cancer Control

Programmes That Are Adequate And Comprehensive In Order To Raise Awareness About Cancer And Encourage People To Get Screened For It. This Will Help Reduce The Number Of New Cancer Cases And Improve The Longevity Of Cancer Patients.

Conflict Of Interest

The Authors Declare No Conflict Of Interest Between Them.

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References

- Akram, M. (2013). Environmental Concerns And Sustainable Development: An Integrated Approach. In Vyas, A (Eds.), Environment Sustainability And Social Change (Pp. 82-95). Jaipur: Oxford Book Company.
- Ali, I., Wani, W. A., & Saleem, K. (2011). Cancer Scenario In India With Future Perspectives. *Cancer Therapy*, 8(8), 56–70.
- Anand, P., Kunnumakara, A. B., Sundaram, C., Harikumar, K. B., Tharakan, S. T., Lai, O. S., Sung, B., & Aggarwal, B. B. (2008). Cancer Is A Preventable Disease That Requires Major Lifestyle Changes. *Pharmaceutical Research*, 25(9), 2097–2116. <https://doi.org/10.1007/S11095-008-9661-9>
- Asthana, S., Chauhan, S., & Labani, S. (2014). Breast And Cervical Cancer Risk In India: An Update. *Indian Journal Of Public Health*, 58(1), 5. <https://doi.org/10.4103/0019-557x.128150>
- Batra, P., Saini, P., & Yadav, V. (2020). Oral Health Concerns In India. *Journal Of Oral Biology And Craniofacial Research*, 10(2), 171–174. <https://doi.org/10.1016/J.Jobcr.2020.04.011>
- Bhat, V., & Bhat, N. (2013). *My Cancer Is Me: The Journey From Illness To Wholeness*. India: Hay House.
- Bobdey, S., Sathwara, J., Jain, A., & Balasubramaniam, G. (2016). Burden Of Cervical Cancer And Role Of Screening In India. *Indian Journal Of Medical And Paediatric Oncology*, 37(4), 278–285. <https://doi.org/10.4103/0971-5851.195751>
- Borse, V., Konwar, A. N., & Buragohain, P. (2020). Oral Cancer Diagnosis And Perspectives In India. *Sensors International*, 1(January), 1–14. <https://doi.org/10.1016/J.Sintl.2020.100046>
- Bouvard, V., Loomis, D., Guyton, K. Z., Grosse, Y., Ghissassi, F. El, Benbrahim-Tallaa, L., Guha, N., Mattock, H., Straif, K., Stewart, B. W., Smet, S. D., Corpet, D., Meurillon, M., Caderni, G., Rohrmann, S., Verger, P., Sasazuki, S., Wakabayashi, K., Weijenberg, M. P., ... Wu, K. (2015). Carcinogenicity Of Consumption Of Red And Processed Meat. *The Lancet Oncology*, 16(16), 1599–1600. [https://doi.org/10.1016/S1470-2045\(15\)00444-1](https://doi.org/10.1016/S1470-2045(15)00444-1)
- Bray, F., Ferlay, J., & Soerjomataram, I. (2018). Global Cancer Statistics 2018: Globocan Estimates Of Incidence And Mortality Worldwide For 36 Cancers In 185 Countries. *Ca Journal For Clinicians*, 6(68), 394–424. <https://doi.org/10.3322/Caac.21492>
- Bray, F., Laversanne, M., Weiderpass, E., & Soerjomataram, I. (2021). The Ever-Increasing Importance Of Cancer As A Leading Cause Of Premature Death Worldwide. *Cancer*, 127(16), 3029–3030. <https://doi.org/10.1002/Cncr.33587>

- Coelho, K. R. (2012). Challenges Of The Oral Cancer Burden In India. *Journal Of Cancer Epidemiology*. <https://doi.org/10.1155/2012/701932>
- Dar, M., & Sharma, K. (2019). Burden Of Cancer In India: Globocan 2018 Estimates Incidence, Mortality, Prevalence And Future Projections Of Cancer In India. *Journal Of Emerging Technologies And Innovative Research*, 6(6), 505–514. <https://doi.org/10.1729/Journal.22750>
- Dikshit, R. P., Mathur, G., Mhatre, S., & Yeole, B. B. (2011). Epidemiological Review Of Gastric Cancer In India. *Indian Journal Of Medical And Paediatric Oncology*, 32(1), 3–11. <https://doi.org/10.4103/0971-5851.81883/Bib>
- Elango, J. K., Sundaram, K. R., Gangadharan, P., Subhash, P., Peter, S., Pulayath, C., & Kuriakose, M. A. (2009). Factors Affecting Oral Cancer Awareness In A High-Risk Population In India. *Asian Pacific Journal Of Cancer Prevention*, 10(4), 627–630. <https://iranjournals.ni.ir/handle/123456789/31793>
- Engmann, N. J., Golmakani, M. K., Miglioretti, D. L., Sprague, B. L., & Kerlikowske, K. (2017). Population-Attributable Risk Proportion Of Clinical Risk Factors For Breast Cancer. *Jama Oncology*, 3(9), 1228–1236. <https://doi.org/10.1001/Jamaoncol.2016.6326>
- Forouzanfar, M. H., Afshin, A., Alexander, L. T., Biryukov, S., Brauer, M., Cercy, K., Charlson, F. J., Cohen, A. J., Dandona, L., Estep, K., Ferrari, A. J., Frostad, J. J., Fullman, N., Godwin, W. W., Griswold, M., Hay, S. I., Kyu, H. H., Larson, H. J., Lim, S. S., ... Zhu, J. (2016). Global, Regional, And National Comparative Risk Assessment Of 79 Behavioural, Environmental And Occupational, And Metabolic Risks Or Clusters Of Risks, 1990–2015: A Systematic Analysis For The Global Burden Of Disease Study 2015. *The Lancet*, 388(10053), 1659–1724. [https://doi.org/10.1016/S0140-6736\(16\)31679-8](https://doi.org/10.1016/S0140-6736(16)31679-8)
- Gandhi, A. K., Kumar, P., Bhandari, M., Devnani, B., & Rath, G. K. (2017). Burden Of Preventable Cancers In India: Time To Strike The Cancer Epidemic. *Journal Of The Egyptian National Cancer Institute*, 29(1), 11–18. <https://doi.org/10.1016/J.Jnci.2016.08.002>
- Globocan India Fact Sheets. 2020. International Agency For Research On Cancer. World Health Organization. <https://gco.iarc.fr/Today/Data/Factsheets/Populations/356-India-Fact-Sheets.Pdf> (Accessed 5 May, 2022).
- Globocan India Factsheet. 2018. Vol. 468; <https://www.gco.iarc.fr/Today/Data/Factsheets/Populations/356-India-Fact-Sheets.Pdf>. (Accessed 4 November, 2018).
- Globocan World Fact Sheets. 2020. International Agency For Research On Cancer. World Health Organisation. <https://gco.iarc.fr/> (Accessed 5 May, 2022).
- Globocan World. 2018. International Agency For Research On Cancer. World Health Organization. <http://gco.iarc.fr/> (Accessed 29 October, 2018).
- Indian Council Of Medical Research-National Centre For Disease Informatics And Research. (2021). Clinicopathological Profile Of Cancers In India: A Report Of The Hospital Based Cancer Registries, 2021. https://ncdirindia.org/all_reports/hbcr_2021/ (Accessed 5 February, 2022).
- Iqbal, Q. M., Ganai, A. M., Bhat, G. M., & Fazili, A. B. (2016). Pattern And Magnitude Of Various Cancers Registered At Regional Cancer Centre Of A Tertiary Care Institute In North India. *International Journal Of Community Medicine And Public Health*, 3(6), 1672–1680. <https://doi.org/10.18203/2394-6040.Ijcmph20161648>
- Jayalakshmi, P. A., Gangadharan, P., Akiba, S., Nair, R. R. K., Tsuji, M., & Rajan, B. (2009). Tobacco Chewing And Female Oral Cavity Cancer Risk In Karunagappally Cohort, India. *British Journal Of Cancer*, 100(5), 848–852.

- <https://doi.org/10.1038/Sj.Bjc.6604907>
- Kakande, I., Ekwaro, L., Obote, W. W., Nassali, G., Kakande, R. I., & Kabuye, S. (2001). The Pattern Of Cancer In Kampala, Uganda. *East And Central African Journal Of Surgery*, 6(1).
- Khan, Z., Tönnies, J., & Müller, S. (2014). Smokeless Tobacco And Oral Cancer In South Asia: A Systematic Review With Meta-Analysis. *Journal Of Cancer Epidemiology*, 1–14. <https://doi.org/10.1155/2014/394696>
- Mallath, M. K., Taylor, D. G., Badwe, R. A., Rath, G. K., Shanta, V., Pramesh, C. S., Digumarti, R., Sebastian, P., Borthakur, B. B., Kalwar, A., Kapoor, S., Kumar, S., Gill, J. L., Kuriakose, M. A., Malhotra, H., Sharma, S. C., Shukla, S., Viswanath, L., Chacko, R. T., ... Sullivan, R. (2014). The Growing Burden Of Cancer In India: Epidemiology And Social Context. *The Lancet Oncology*, 15(6), E205–E212. [https://doi.org/10.1016/S1470-2045\(14\)70115-9](https://doi.org/10.1016/S1470-2045(14)70115-9)
- Malik, P. S., & Raina, V. (2015). Lung Cancer: Prevalent Trends & Emerging Concepts. *Indian Journal Of Medical Research, Supplement*, 141(Jan 2015), 5–7. <https://doi.org/10.4103/0971-5916.154479>
- Mccormack, V. A., & Boffetta, P. (2011). Today's Lifestyles, Tomorrow's Cancers: Trends In Lifestyle Risk Factors For Cancer In Low- And Middle-Income Countries. *Annals Of Oncology*, 22 (11), 2349-2357.
- Mohan, A., Garg, A., Gupta, A., Sahu, S., Choudhari, C., Vashistha, V., Ansari, A., Pandey, R., Bhalla, A. S., Madan, K., Hadda, V., Iyer, H., Jain, D., Kumar, R., Mittal, S., Tiwari, P., Pandey, R. M., & Guleria, R. (2020). Clinical Profile Of Lung Cancer In North India: A 10-Year Analysis Of 1862 Patients From A Tertiary Care Center. *Lung India*, 37(1), 190–197. <https://doi.org/10.4103/Lungindia.Lungindia>
- Monica, & Mishra, R. (2020). An Epidemiological Study Of Cervical And Breast Screening In India: District-Level Analysis. *Bmc Women's Health*, 20(1), 1–15. <https://doi.org/10.1186/S12905-020-01083-6>
- National Family Health Survey (Nfhs 4) 2015-16: India And 29 States. 2017. Government Of India- Ministry Of Health And Family Welfare, Mumbai: International Institute For Population Sciences.
- Park, K. (2015). *Preventive And Social Medicine (23rd Ed.)*. Jabalpur: Banarsidas Bhanot.
- Plummer, M., Franceschi, S., Vignat, J., Forman, D., & De Martel, C. (2015). Global Burden Of Gastric Cancer Attributable To Pylori. *International Journal Of Cancer*, 136(2), 487–490. <https://doi.org/10.1002/Ijc.28999>
- Rao, D. N., Ganesh, B., Dinshaw, K. A., & Mohandas, K. M. (2002). A Case-Control Study Of Stomach Cancer In Mumbai, India. *International Journal Of Cancer*, 99(5), 727–731. <https://doi.org/10.1002/Ijc.10339>
- Reddy, K. S., Shah, B., Varghese, C., & Ramadoss, A. (2005). Responding To The Threat Of Chronic Diseases In India. *The Lancet*, 366(9498), 1744-1749. [https://doi.org/10.1016/S0140-6736\(05\)67343-6](https://doi.org/10.1016/S0140-6736(05)67343-6)
- Sathishkumar, K., N, V., Badwe, R. A., Deo, S. V. S., Manoharan, N., Malik, R., Panse, N. S., Ramesh, C., Shrivastava, A., Swaminathan, R., Vijay, C. R., Narasimhan, S., Chaturvedi, M., & Mathur, P. (2021). Trends In Breast And Cervical Cancer In India Under National Cancer Registry Programme: An Age-Period-Cohort Analysis. *Cancer Epidemiology*, 74(June), 101982. <https://doi.org/10.1016/J.Canep.2021.101982>
- Sinha, R., Cross, A. J., Graubard, B. I., Leitzmann, M. F., & Schatzkin, A. (2009). Meat Intake And Mortality. *Archives Of Internal Medicine*, 169(6), 562. <https://doi.org/10.1001/Archinternmed.2009.6>
- Sharma, S., Satyanarayana, L., Asthana, S., Shivalingesh, K. K., Goutham, B. S., &

- Ramachandra, S. (2018). Oral Cancer Statistics In India On The Basis Of First Report Of 29 Population-Based Cancer Registries. *Journal Of Oral And Maxillofacial Pathology: Jomfp*, 22(1), 18. <https://doi.org/10.4103/Jomfp.Jomfp>
- Reddy, K. S., Shah, B., Varghese, C., & Ramadoss, A. (2005). Responding To The Threat Of Chronic Diseases In India. *The Lancet*, 366(9498), 1744-1749.
- Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global Cancer Statistics 2020: Globocan Estimates Of Incidence And Mortality Worldwide For 36 Cancers In 185 Countries. *Ca: A Cancer Journal For Clinicians*, 71(3), 209–249. <https://doi.org/10.3322/caac.21660>
- Takiar, R., Nadayil, D., & Nandakumar, A. (2010). Projections Of Number Of Cancer Cases In India (2010-2020) By Cancer Groups. *Asian Pacific Journal Of Cancer Prevention*, 11(4), 1045–1049.
- Varshitha, A. (2015). Prevalence Of Oral Cancer In India. *Journal Of Pharmaceutical Sciences And Research*, 7(10), 845–848.