

## Malwa region, the focal point of cancer cases in Punjab: A Review study

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### Abstract

The Malwa region, commonly known as the cotton belt of Punjab comprising Bathinda, Mansa, Muktsar, Patiala, Sangrur among other districts is witnessing the steep rates in cancer cases. It has the highest average of 136 cancer patients per 1 lakh people which is exceeding the national average of 80 per lakh. This study aims to provide a review of published data on the spurt in increasing cancer cases in the malwa region of Punjab. A comprehensive review was undertaken by searching the Google, Pubmed, and Research Gate on line, for research articles and reports published between 2008 and 2016. The data shows a continuous increase in the number of cancer cases in the last 12 years. The highest number of cancer cases among the four districts are in Muktsar, followed in order by the Mansa, Faridkot, and Bathinda districts. The results of the present study revealed that the unusually high incidence of cancer cases in Malwa region were due to the over use of pesticides. This review article is a modest step to highlight the negative impact faced by the people of Malwa Region and urgency to take immediate measures to put an end to the spread of this dreadful disease.

**Key Words:** Malwa region, Cancer cases, Pesticides>

### I. Introduction

Cancer is a word we are all brought up to dread. A cancer diagnosis can have a huge impact on most patients, families, and caregivers. Feelings of depression, anxiety, and fear are very common and are normal responses to this dreadful disease. In the 1960s and '70s the Green Revolution in Punjab was one of the biggest advancement. Farmers switched from traditional methods to the advanced way of farming with pesticides, fertilizers and high-yield seeds which enabled them to fight hunger. The government opened the doors for the Green Revolution without implementing the safeguards to protect the population. The Malwa region, commonly known as the cotton belt of Punjab comprising Bathinda, Mansa, Muktsar, Patiala, Sangrur among other districts is suffering the major negative impact of the same. According to the State Council for Science and Technology's State of Environment Report 2007, Malwa belt consumes 75% of the pesticides used in Punjab. Researchers at School of Public Health in Punjab conducted a study to ascertain the correlation between pesticide use and cancer in the Punjab farming community. Based on data collected from 1993 to 2003, a study was published in the International Journal of Environmental Research and Public Health. It revealed a statistically significant increase in cancer rates in high-pesticide areas. The only possible explanation was that the farmers were overusing pesticides and not handling the toxic chemicals safely. Labeled as 'cancer belt' of Punjab, the Malwa region is witnessing the steep rates in cancer cases. The unusually high incidence, especially in the cotton growing districts of south-western Punjab, has been linked to the use of pesticides by cotton farmers, among other factors. As revealed by the Punjab government, it has the highest average of 136 cancer patients per 1 lakh people which is more than the national average of 80 per lakh. The number of cancer patients has steeply multiplied during the past couple of years in the Malwa belt and the common people has attributed it to the excessive use of pesticides that has contaminated the underground water that they consume. Eventually, the country's food bowl is in the throes of cancer. It is upsetting that nearly 24,000 people in the state are confirmed cancer cases and there are three time more 84,453 people are suspected to be suffering from the

deadly disease. Based on the NCRP data, it is estimated that the cancer cases which will be raised to 1,044,650 by the year 2020 which has made it an important public health issue and to tackle it would need immediate and major inputs from various agencies.

## II. Aim and Objectives

This study aims to provide a review of published data on the spurt in increasing cancer cases in the malwa region of Punjab. This has brought the Malwa region into the focus of state government, researchers, health agencies and the media. The cotton belt of Punjab has now become the cancer belt. Reviewing the sources of information, it is found that the use of relentless pesticides without education and adequate awareness has a significant correlation with the steep rise in the number cancer cases in the farming zone. This review serves as a call to action for future research efforts to target and evaluate prevention strategies by forecasting the cancer burden. A greater emphasis on primary prevention and early detection is needed to counter the adverse scenario.

## III. Methodology

A comprehensive review was undertaken by searching the Google, Pubmed, Research Gate on line, for research articles and reports published between 2008 and 2016. The database search terms included keywords such as cancer cases, Malwa region, Punjab, Green revolution, pesticides, cancer registries, agricultural land, cancer belt, statistics, incidence and predictions. A variety of combinations of these words were entered.

## IV. Results

| Author              | Journal  | Place/Year                              | Type of Study        | Results  |
|---------------------|--|---|----------------------|--|
| Oberoi Simmi        | International Journal of Contemporary Medical Research         | Muktsar, Mansa, Faridkot, Bathinda 2016 | Innovative solutions | Cancer is so prevalent in the Malwa region that the region has been called India's Cancer Capital. The data shows a continuous increase in the number of cancer cases in the last 12 years. The highest number of cancer cases among the four districts are in Muktsar, followed in order by the Mansa, Faridkot, and Bathinda districts. E Health Point units, started in rural India, intending to provide families in affected villages with, advanced tele-medical services.         |
| Balvinder Kaur Brar | Scholars Journal of Applied Medical Sciences                   | Faridkot 2015                           | Retrospective study  | A total of 52 cases of histologically diagnosed skin malignancies were reported during the study period. Basal cell carcinoma (BCC) was found to be the most common skin cancer in Malwa belt of Punjab, followed by squamous cell cancer of skin (SCC). Malignant melanoma was third most common, followed by sporadic cases of Mycosis fungoides (MF), Dermato fibrosarcoma protuberans (DFSP) and cutaneous B-cell lymphoma.  |
| Sunil Mittal        | Human and Ecological Risk Assessment: An International Journal | Malwa Region 2014                       | Review Study         | Studies conducted in the Malwa region have also highlighted a sharp increase in many other pesticide-related diseases, such as mental retardation and reproductive disorders. The most affected individuals are the agricultural workers who are directly exposed to pesticides. The Malwa region of Punjab, India, is less than 15% of the total area of Punjab (only 0.5% of the total geographical area of India), but it consumes nearly 75% of the total pesticides used in Punjab. |

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| Collaborative project | Population Based Cancer Registries at Chandigarh and SAS Nagar, Mansa, Sangrur districts Punjab State, India | Chandigarh and SAS Nagar, Mansa, Sangrur 2013 | Collaborative Report     | Cancer registries are the first step in cancer control. The registry data has estimated the risk of getting cancer in the males is in the range of 5 to 11% and in females 6 to 13%. The risk is double in the urban area as compared to rural area. The major cancers in Punjab are Breast, Cervix Uteri, Lung, Prostate and Oesophagus..  |
| Report                | Development of an Atlas of Cancer in Punjab State  | Districts of Punjab 2012-2013                 | Collaborative Report     | Sites of cancer that show higher or comparably high incidence rates with the highest seen in other PBCRs in India are: in males: penile cancer (in Faridkot and Bathinda), prostate (Jalandhar), urinary bladder (Kapurthala, Jalandhar) and brain (Mohali and Mansa); in females: breast (Bathinda, Mohali), vagina (Bathinda, Ludhiana), ovary (Mohali) and brain (Moga and Mohali).  |
| Sewa Singh            | International Journal of Environment and Health  | Villages of Punjab 2011                       | Conducting Survey        | It was a study to assess the drinking water quality and its impacts on human health in the rural area of a region in Punjab (India). Samples of ground water from five villages have been tested and it has been found that 65% of samples have excessive fluoride, 100% have excessive turbidity, and 55% have excessive total dissolved solids (TDS). Significant association has been found between education-awareness and income-awareness using chi square test at 5% level of significance.  |
| Ramnath Takiar        | Asian Pacific Journal of Cancer Prevention   | India 2010                                    | Linear Regression method | The total cancer cases are likely to go up from 979,786 cases in the year 2010 to 1,148,757 cases in the year 2020. The tobacco-related cancers for males are estimated to go up from 190,244 in the year 2010 to 225,241 in the year 2020. Similarly, the female cases will go up from 75,289 in year 2010 to 93,563 in the year 2020. For the year 2010, the number of cancer cases related to digestive system, for both males and females, are estimated to be 107,030 and 86,606 respectively. For, head and neck cancers, the estimates are 122,643 and 53,148 cases, respectively. and for the lymphoid and hematopoietic system (LHS), for the year 2010, are 62,648 for males and 41,591 for females. Gynecological-related cancers are estimated to go up from 153,850 in 2010 to 182,602 in 2020. Among males and females, cancer of breast alone is expected to cross the figure of 100,000 by the year 2020. |

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| Bajinder Pal Singh | International Institute for Geo-information Science and Earth Observation | Malwa Region 2008   | Random Sampling   | Consumption patterns of pesticides in India differ with the rest of the world. In India over three fourths of the pesticide usage comprises insecticides, with herbicides and fungicides falling a way below the global norm. The state of Punjab is the largest consumer of pesticides in the country. In the year 2004-2005, Punjab consumed 6900 metric tonnes of pesticides which is startling, since it is the smallest states in India. Other states like Andhra Pradesh and Uttar Pradesh have significantly reduced their pesticide consumption over the years. But there is no such trend observed in Punjab.   |
| J. S. Thakur       | Int J Environ Res Public Health   | Talwandi Sabo and Chamkaur Sahib Community Development Blocks in Bathinda and Roop Nagar District respectively 2008 | Conducting Survey | There were 107 histologically confirmed cancer cases at Talwandi Sabo, out of which 27 (25.2%) were males and 80 (74.7%) were females. There were 71 confirmed cancer cases at Chamkaur Sahib, out of which 25(35.2%) were males and 46(64.7%) were females. Age adjusted prevalence of confirmed cancer cases was 125.4 per 100,000 at Talwandi Sabo as compared to 72.5 at Chamkaur Sahib (p<0.001). In Talwandi Sabo there were 3827 deaths in last 10 years, out of which 489 deaths were due to cancer whereas in Chamkaur Sahib there were 3621 deaths in the same period, out of which 314 were cancer deaths. Proportion of deaths due to cancer over the last 10 years remained between 10 to 13 % at Talwandi Sabo and 7 to 10% at Chamkaur Sahib. Age adjusted cancer death rate per 1,00,000 per year at Talwandi Sabo was 51.2 as compared to 30.3 at Chamkaur Sahib. |

## V. Discussion

The studies conducted in India's Bread Basket of Punjab reveals the increasing number of cancer cases in the area. The Malwa region of Punjab is facing an unprecedented crisis of environmental health linked to indiscriminate, excessive, and unsafe use of pesticides and fertilizers for decades resulting in poor groundwater quality. Studies conducted in this region have highlighted a sharp increase in the cancer cases and many other pesticide related diseases, such as mental retardation and reproductive disorders. The Malwa region of Punjab has recorded a high of 107.4 cancer-afflicted for every 1 lakh. And, Muktsar district in Malwa has fared the worst with 136.3 patients for every lakh. The Malwa region, comprising Bathinda, Mansa, Muktsar, Patiala, Sangrur among other districts, has recorded cancer incidence of 107.4 per lakh as against the national figure of 80 per lakh. Majha, comprising Amritsar, Gurdaspur and Taran Taran, has clocked the lowest incidence of 64.7 cases of cancer per lakh population. The rich Doaba region, including, Jalandhar, Hoshiarpur, Phagwara, Kapurthala, has confirmed 88.1 cancer patients per lakh of population. The number of cancer patients has grown manifold in the recent years in the Malwa area. Cancer is a disease which is deeply rooted in environmental practices and lifestyle habits. There is significant correlation between pesticide residues in soil and water with carcinogenic agents. Data over the last five years has shown that, on an average, 18 people die of cancer each day. There are 23,874 cancer patients in the state and 33,318 lives have been lost in cancer-related deaths during last five years. The absolute number of cancer patients is increasing rapidly due to growth in size of the population. More than 800,000 new cases were present during the year 2001 and would get increased to 1220,000

by 2016. It is a huge burden. The existing treatment facilities for cancer control in-terms of radiotherapy and financial allocation are woefully inadequate to take care of even the present load.

## VI. Conclusion

The Malwa region is at the top list in cancer cases with 14,682 of the 33,318 deaths. The unusually high incidence, especially in the cotton growing districts of south-western Punjab, has been linked to the use of pesticides by cotton farmers, among other factors. This review article is a modest step to highlight the negative impact faced by the people of Malwa Region and an urgency to take immediate measures to put an end to the spread of this dreadful disease. The consequences being faced by people in the Malwa region could serve as a warning signal to the rest. The indiscriminate pesticide usage combined with an absence of regulations limiting its use could have far reaching adverse consequences. Measures should be taken to make villages pesticides free. Awareness campaign is needed to educate farmers of the deleterious affects of excessive pesticide usage. Environment saving organizations should formulate a best practice for use and application of pesticides. The subject needs a state wide more intensive and detailed study.

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