Data Analysis

Of

Punjab Cancer Awareness Campaign

A dissertation submitted in partial fulfilment of the requirements for the award of

Post-Graduate Diploma in Health and Hospital Management

by

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May, 2013

HISP INDIA SOCIETY FOR HEALTH INFORMATION SYSTEMS PROGRAMMES

April 7, 2013

To Whom It May Concern

This is to inform, that Dr. Gitika Arora, student at International Institute of Health Management Research (IIHMR), New Delhi, has successfully completed internship with the Society for Health Information Systems Programmes, India (HISP India) working with various Indian states in setting-up e-Health systems, from January 2013 to March 2013. Her contributions have been in data analysis for Punjab Cancer Awareness Campaign and rationalization of HMIS formats for Haryana.

She came across as a good team member with potential of being an asset to the organisation her works. I wish her good luck.

(Sundeep Sahay)

Certificate of Approval

The following dissertation titled **"Data Analysis of Punjab Cancer Awareness Campaign"** is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post- Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation

Name	Signature
Avanish Kr. Singh	
Kirti Udayai	
I. Bhattacharya	

Certificate from Dissertation Advisory Committee

This is to certify that **Dr. Gitika Arora**, a graduate student of the **Post-Graduate Diploma in Health and Hospital Management**, has worked under our guidance and supervision. She is submitting this dissertation titled "**Data Analysis of Punjab Cancer Awareness Campaign**" in partial fulfillment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital Management**.

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

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Name of the Student: **Dr. Gitika Arora**

Dissertation Institution: **HISP India**

Area of Dissertation: **Health Informatics – Data analysis and rationalization of HMIS formats**

Attendance: **100%**

Objectives met: **yes**

Deliverables: **analysis of patient based data on cancer, rationalization of HMIS formats for Department of Health & Family Welfare, Haryana**

Strengths: **Gitika is an ardent learner, has good communication skills and is able to effectively comprehend instructions and follow them diligently**

Suggestions for Improvement: **should always be good learner**

Wishing her all the very success for future endeavors

Arunima S Mukherjee

Signature of the Officer-In-Charge / Organisation Mentor (Dissertation)

Date: April 7, 2013
Place: Shimla

Abstract

Data Analysis of Punjab Cancer Awareness Campaign

By

Dr. Gitika Arora

Considering the upcoming trends in mobile heath, Punjab state took a pioneering step and decided to launch the use of mobile phone to strengthen their system of reporting, especially with respect to timeliness and data coverage. Punjab Cancer Awareness Campaign was started on collaboration with HISP India. The campaign involved mobile reporting and data was collected through DHIS2 tracker.

This study involves data analysis and data quality assessment for the data collected through DHIS2 tracker. This is an Analytical study where data was collected from all 20 districts of Punjab from different organisation units in urban and rural areas of Punjab through mobile application and DHIS2 tracker. The quantitative analysis of data was done and graphs and pie charts generated through SPSS.

On analysis, it was seen that of the total cancer cases reported in Punjab, maximum cases had symptoms of cancer and were suspected cases. Of the females diagnosed with cancer, most common cancers were Breast cancer and Uterus/Cervix Cancer. While in males, the most common were Oesophagus/Larynx/Lung Cancer followed by Liver/Gall Bladder Cancer. Cancer was most commonly recorded in older age groups. Rural areas reported maximum cases of cancer as compared to urban areas. On assessing data quality, data was not complete. There was large amount of missing data which was not recorded through organisation units. Districts Nawanshahr, Fatehgarh, Ropar and Bathinda contributed to maximum of the gaps in data collected.

Acknowledgement

I take immense pleasure in thanking **Prof Sundeep Sahay**, President, HISP India, for providing me great opportunity to do my dissertation at HISP India, Shimla.

I sincerely thank my project guide **Ms. Arunima S Mukherjee**, Lead-Health Systems Cluster, HISP India, for her kind guidance and encouragement during my project "Data Analysis of Punjab Cancer Awareness Campaign".

I wish to express my deep sense of gratitude to my Internal Guides, **Prof. Indrajit Bhattacharya** and **Prof. (Dr.) T. Muthukumar**, IIHMR, New Delhi and for their guidance and support.

I would also like to express my thanks to the officials and other staff members of HISP India who rendered their help during my project.

I wish to avail myself of this opportunity to express a sense of gratitude and love to my family and friends for their support and strength.

Dr. Gitika Arora

Table of Contents

List of Figures

List of Appendices

Abbreviations

ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
CAC	Cancer Awareness Campaign
CCEM	Cold Chain Equipment Management
CHC	Community Health Centre
DH	District Hospital
DHIS2	District Health Information Software 2
DQA	Data Quality Assessment
HISP	Health Information Systems Programmes
PHC	Primary Health Centre
SC	Sub Centre
SHSRC	State Health System Resource Centre
SPSS	Statistical Package for Social Sciences

PART I

Internship Report

1. Organization Profile

HISP India is a not-for-profit NGO specializing since more than a decade in designing and implementing solutions in health informatics for the public health sector in Indian states, and also recently in Bangladesh and Sri Lanka. It is not a solely technology focused organization, but a multi-disciplinary organization concentrating on the domains of public health and informatics. The organization has a strong commitment to free and open source technologies, and works with a global perspective of the **Health Information Systems Programmes (HISP) network**, coordinated by the University of Oslo, Norway, and is active in more than 20 countries in Africa and Asia. HISP India has a registered head office in New Delhi, and project offices in Kerala, Himachal Pradesh, and Punjab. The team members are intensively travelling to different parts of the country to provide technical support services.

1.1 Vision

"To enable and coordinate a network of excellence in public health informatics, specializing in integrated health information architectures, with a geographical focus on South-East Asia."

1.2 History

In 1999, an informal group of idealists got together to start a project in a primary health centre in the remote villages of Kuppam, Chittoor district in Andhra Pradesh. These efforts were supported by the University of Oslo, Norway, and had initial partnerships with IIM Bangalore and ASCI Hyderabad. During the first five years, it remained focused on Andhra Pradesh and carried out implementations of the first version of the DHIS software application. From 2005, it started to work in the State of Kerala first in one facility and by 2008 all the facilities were reporting data in the DHIS2. The DHIS2, which is a global standard today for facility reporting, took birth in a clinic in Kerala in 2006. The achievements in Kerala prompted the state of Gujarat first, and then Jharkhand

and Madhya Pradesh to initiate DHIS2 implementations. This led to collaboration in 2008 at the national level with National Health Systems Resource Centre (NHSRC) to provide technical support on DHIS2 nationally. About 25 states took up DHIS2 in 2008. Today, HISP has gained international recognition, and has also been invited to provide technical support in Bangladesh, Sri Lanka, Rwanda, and Philippines.

1.3 Geographical Coverage

With 30 team members, HISP has a strong national and global coverage of work. In India, it has worked in at least 90% of the states, and currently has a presence in about 20 states. Internationally, HISP India has worked in Bangladesh and Sri Lanka, and on an individual basis, experts have contributed to Global HISP activities in various countries including Vietnam, Tanzania, Zanzibar, Ethiopia, Mozambique, South Africa, and those in West Africa.[1]

2. Tasks Performed

2.1 OpenMRS Testing for Mandi and Kullu districts

Testing of OpenMRS application designed for District Hospitals of Mandi and Kullu districts of Himachal Pradesh was done.

Different modules of the application were tested by creating test patients and testing the complete workflow of the hospital.

The bugs or issues identified were reported and sent to the development team.

2.2 CCEM Manual Designing

CCEM module in the application was well studied and then the manual was created for end users and administrators. The manual was prepared keeping in mind to make the application user friendly and easy to use by end users and administrators.

The manual included screen shots and step wise methods for easy understanding of the users.

2.3 DQA Application Customization

Customization of data elements and indicators for DQA application based on WHO Quality Assessment Tool was done. Data elements and indicators were customized according to a particular standard.

2.4 Rationalisation of Formats for DHIS Haryana

Data reporting formats for SC, PHC/CHC/DH for DHIS Haryana were to be rationalised, for which a visit for a span of around 3 weeks was done at NRHM Haryana.

Data elements for which no data was recorded were to be removed and new elements as required by Govt. of India formats and requirements of state were to be added.

Meetings were arranged with different departmental heads in NRHM Haryana and after vigorous discussions and clarifications, the formats were finalised and sent for development.

2.5 Documentation of feedback on ASHA Portal for Haryana

ASHA portal developed for Haryana State was demonstrated to concerned officials and their feedback was recorded and documented and sent to development team.

2.6 Data Analysis for CAC Punjab

Data analysis for CAC Punjab was done on a regular interval of 10-15 days. The details are discussed in the dissertation report.

3. Reflective Learning during Internship

During internship, most important learning was development of my analytical skills while analysing the data for CAC Punjab.

I also learnt about testing and customizing applications and documentations.

While working on CCEM, I learnt about designing manual and the significance of thinking through user's perspective to make the manual more effective and communicative.

While working on DHIS Haryana, organising meetings with the officials, participating in discussions with officials from Maternal Health, Child Health, Family Welfare, Referral Transport and HMIS, gave me a deeper insight into the current health scenarios and challenges faced while reporting health data.

PART II

Dissertation on

“Data Analysis of Punjab Cancer Awareness Campaign”

Chapter 1 Introduction

Considering the upcoming trends in mobile heath, Punjab state took a pioneering step and decided to launch the use of mobile phone to strengthen their system of reporting, especially with respect to timeliness and data coverage. The use of mobile technology was seen as a vehicle to address key problems faced by the ANMs such as being overburdened with clinical and administrative tasks which makes it difficult for them to comply with reporting deadlines, adverse climatic conditions such as in summer months or monsoons, and the non availability of public transport.

Punjab State started a survey on total population of Punjab (urban and rural both) for cancer prevalence in the state where cancer cases for the last five years were reported. Urban population survey was covered by Medical College and nursing college students etc. while rural population survey was covered by ANM's, ASHA's male health workers & LHV's

The main objectives of the survey were-

- To generate awareness on warning sign/symptoms of Cancer
- To venture for symptom based early detection
- To access the cancer load in the state for further planning

Two Performa were designed namely: Performa 1 and Performa 2

- **Performa 1**: This Performa is used for capturing basic information of each and every family member of a household in a village in rural area and cities/towns/wards in urban area. The information which is being captured is name, age group, education and family history of cancer etc

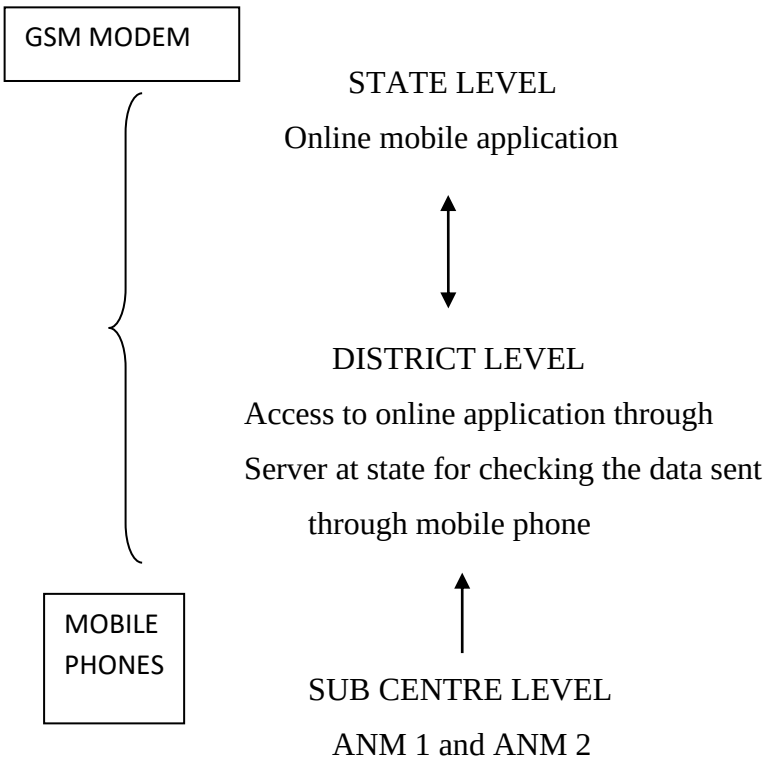
- **Performa 2:** Out of the 1st survey if any person is cancer positive or have some symptoms which can lead to cancer, Performa no. 2 will be filled for those patients. This is a name based Performa with fields specific to the disease and some demographic details of the patient.

Role of HISP INDIA

To develop SMS based application for reporting through mobile phone in an effective manner. Integrating mobile reporting with the State DHIS2 online application for facility reporting and analysis.

The data entry of cancer awareness campaign is done on DHIS 2 Tracker on which the rural data is coming via sending reports on DHIS2 tracker and the urban data is coming via direct entry on DHIS2 tracker by data entry operator.

Data information flow:



The ANM was trained on how to fill all the fields included in the dataset of the application loaded in her mobile phones using the Performa. The ANM sends the data through her mobile and then the data received through mobile reporting can be accessed online at district level through server which can then be analyzed at state level.

For urban area data entry the form is designed on DHIS2 Tracker. The individual record of patient has to be entered on patient registration screen; similarly the output in form of reports can be viewed by going to CRTIS report.

The pilot study was done in November 2012 in one of the districts of Punjab and then live entries were started from December 2012 from all the 20 districts of Punjab. The data collected was then to be analysed in terms of number of cancer load in the state, to analyse the age wise, gender wise and organ wise cancer cases reported in the state as demanded by the state.

The rationale of this study is to achieve the objectives of campaign that were analysing the cancer load in the state and thus taking required actions for its control. This study also aims to analyse the gaps in the cases reported in DHIS 2 to those reported by the state through their survey. The gaps thus identified have to be reduced to minimal by accelerating the reporting in the application.

The scope of the analysis is limited to analysing the cancer cases reported in the application and available in DHIS2 database.

Problem Statement

As the cancer prevalence is increasing on a fast pace, there is a need to analyse the cancer load on the state so that appropriate steps can be taken by the state to prevent or reduce the occurrence.

By the cancer awareness campaign, the main objective was to increase the awareness on cancer signs and symptoms and for early detection of symptoms so that prompt treatment can be initiated. Thus, the data that is collected through this initiative has to be analysed for early detection of suspected cases, thus initiating their treatment as required.

On analysing the total cancer load, it can be seen that which age group or gender or organ or area is affected the most. This analysis can help state in their decisions to prioritise on where to focus to reduce the cancer prevalence in their state and improve the health scenario.

Review of Literature

According to an Epidemiological Study of High Cancer among Rural Agricultural Community of Punjab in Northern India by J. S. Thakur, B. T. Rao1, Arvind Rajwanshi, H. K. Parwana and Rajesh Kumar, a house-to-house survey was conducted in Talwandi Sabo and Chamkaur Sahib Community Development Blocks in Bathinda and Roop Nagar District respectively in Punjab state located in a northern part of India to identify the number of existing cancer cases, and the number of cancer deaths that occurred in the last 10 years. Age adjusted prevalence of confirmed cancer cases per 100,000 population was 125 (107/85315) in Talwandi Sabo and 72 (71/97928) in Chamkaur Sahib. Cancer of female reproductive system, i.e., breast, uterus/cervix and ovary were more common in Talwandi sabo whereas cancer of blood and lymphatic system, esophagus, and bones were more common in Chamkaur Sahib.[2]

According to a research article, Cancer Scenario in India with Future Perspectives by Imran Ali, Waseem A. Wani and Kishwar Saleem, Breast cancer is the second most while cervical cancer is the third most common form of malignancy in female population of Punjab. Gall bladder cancer is not frequent in India but it has been diagnosed in certain parts of Punjab.[3]

More than 5,56,000 cancer deaths occurred in India in 2010 and 71.1 per cent of those who died were aged between 30 and 69 years, says a report on cancer mortality in India, published in the March 28 issue of *The Lancet*. While men in the age group of 30-69 years are more likely to die of oral cancers followed by stomach and lung cancers, the most fatal cancers in women are cervical, stomach, breast and oral.[4]

Objectives

General Objective

To analyse the cancer data reported through DHIS2 tracker in cancer awareness campaign in Punjab State, identify the gaps and assess the quality.

Specific Objectives

- To analyse the cancer deaths, confirmed cases and suspected cases reported in CAC in Punjab.
- To analyse the district wise cancer data reported gender wise, age group wise, organ wise and urban rural wise.
- To identify the gaps between the cancer data reported in DHIS2 and that reported by Govt. of Punjab through their survey.
- To assess the quality of data reported in DHIS2.

Chapter 2 Data and Methods

Study Design- Analytical Study

Data Collection- The data was collected from all 20 districts of Punjab. Performa 1 and 2 as given in Appendix 1 and 2 were used to collect data and data was reported through mobiles and DHIS2 application.

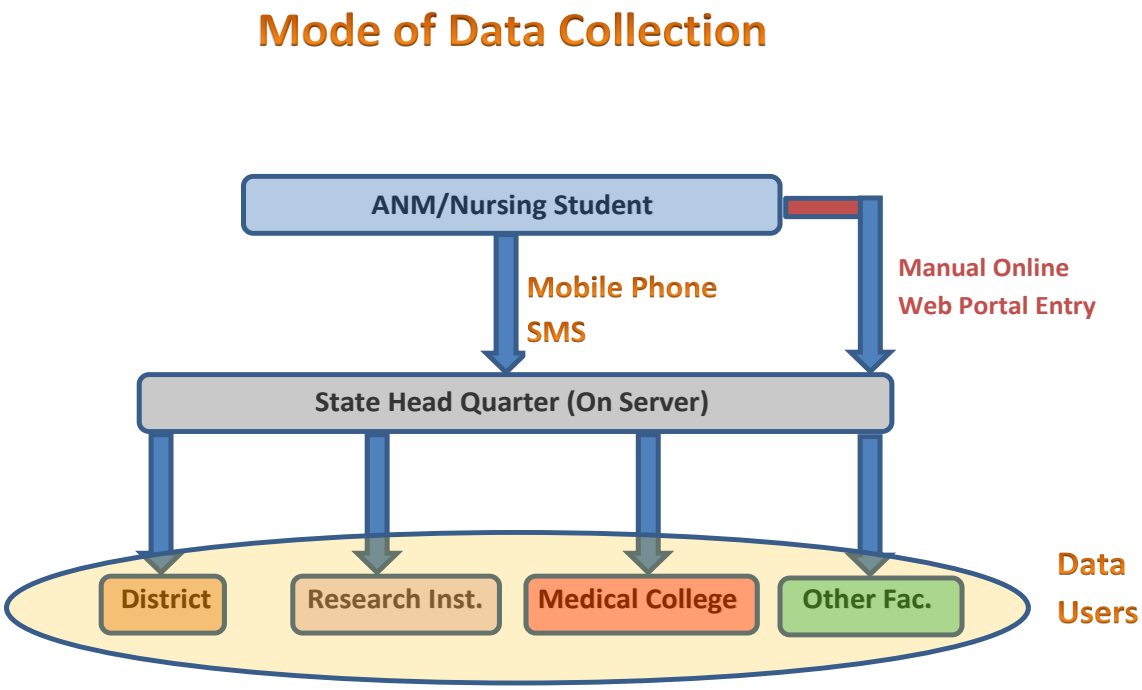


Fig 1- Mode of data collection for Cancer Awareness Campaign

Data Analysis- Quantitative Analysis of CAC data.

Database from cancer application is imported in SQLyog and then data required for analysis is taken from the database by running queries in SQLyog. Different queries are run for generating data on Cancer deaths, confirmed cases and suspected cases. Data on age wise, gender wise and organ wise breakup is also generated through running queries on SQLyog.

The data thus generated is then analysed on SPSS and results generated in the form of tables, graphs or pie charts.

Chapter 3- Results and Findings

The cancer cases were reported under three categories-

- Cancer Deaths- Cases who were diagnosed with cancer and died in last five years.
- Cancer Confirmed Cases- Cases who are suffering from Cancer.
- Cancer Suspected Cases- Cases having symptoms that suspect of cancer.

The analysis of cancer data was done under following categories-

- Analysis for Cancer Deaths, Confirmed and Suspected Cases
- Gender Wise Analysis
- Age-group Wise Analysis
- Organ Wise Analysis
- Urban-Rural Analysis
- Analysis of Gap between cancer data reported in DHIS and that reported by SHSRC through their survey.

3.1 Analysis for Cancer Deaths, Confirmed Cases and Suspected Cases

In Punjab, of the total population covered (**27067539**), Total Cancer Cases recorded through CAC in DHIS till March 30th, 2013 were **78807.**

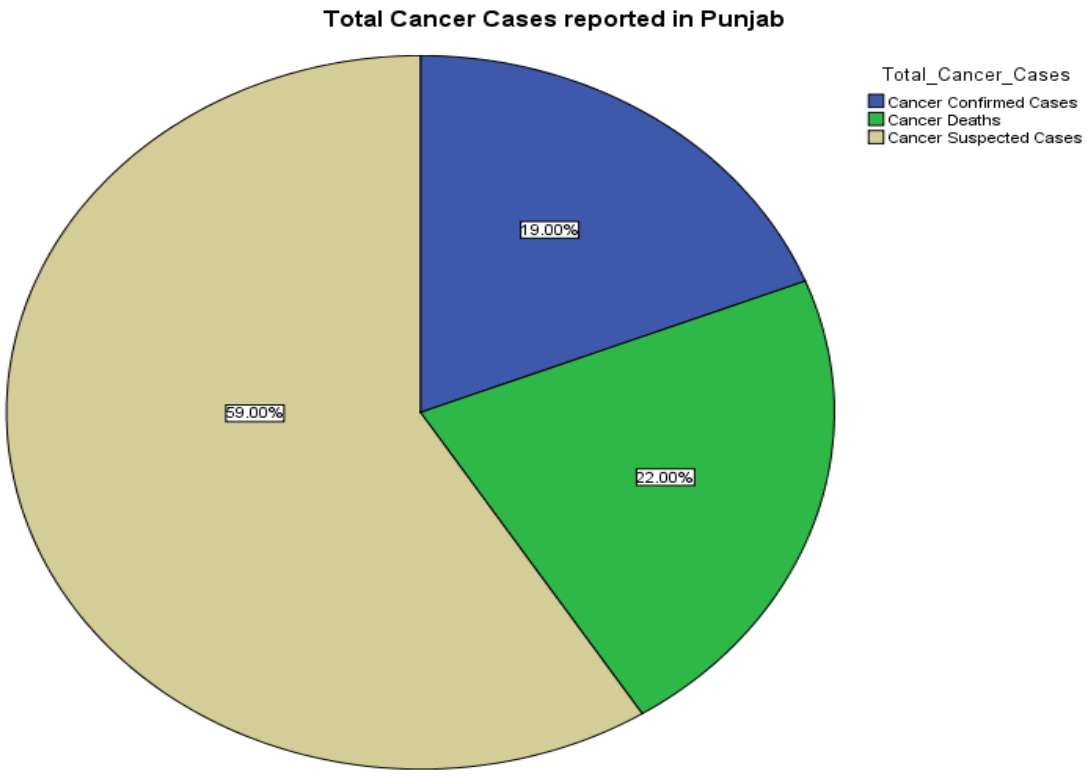


Fig 2- Total Cancer Cases reported in Punjab

On analysing the Total Cancer Cases reported in Punjab, 59% of cases were Cancer Suspected Cases, 22% were Cancer Deaths and 19% were Cancer Confirmed Cases.

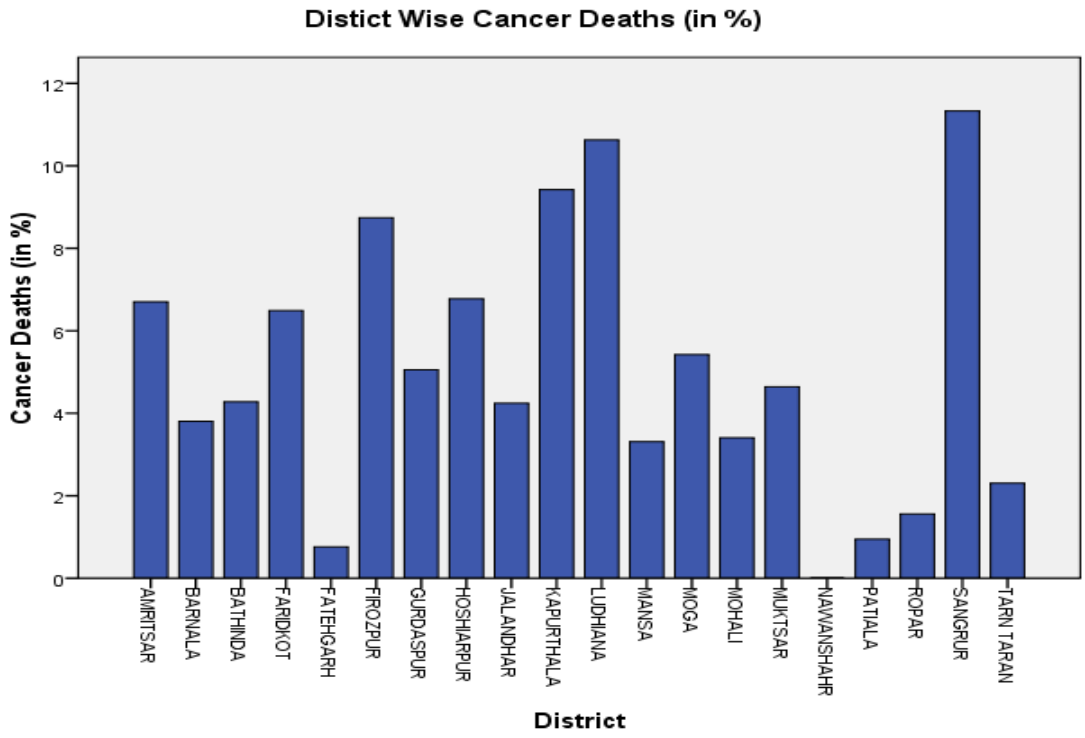


Fig 3- District Wise Cancer Deaths Reported

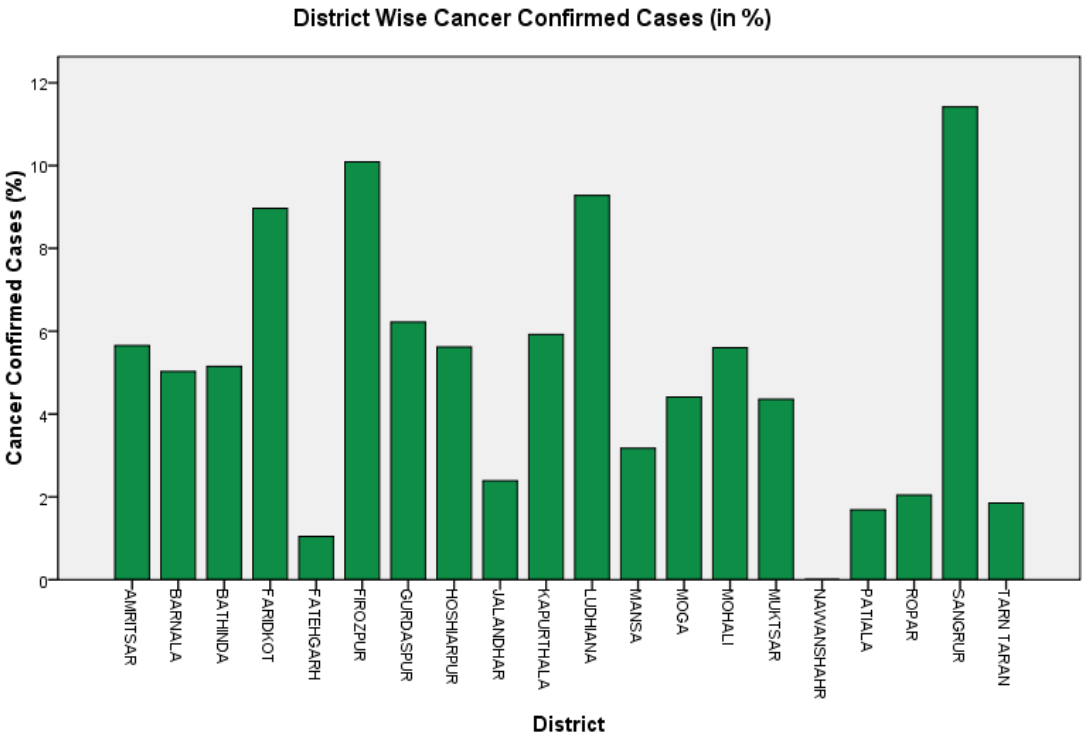


Fig 4- District Wise Cancer Confirmed Cases Reported

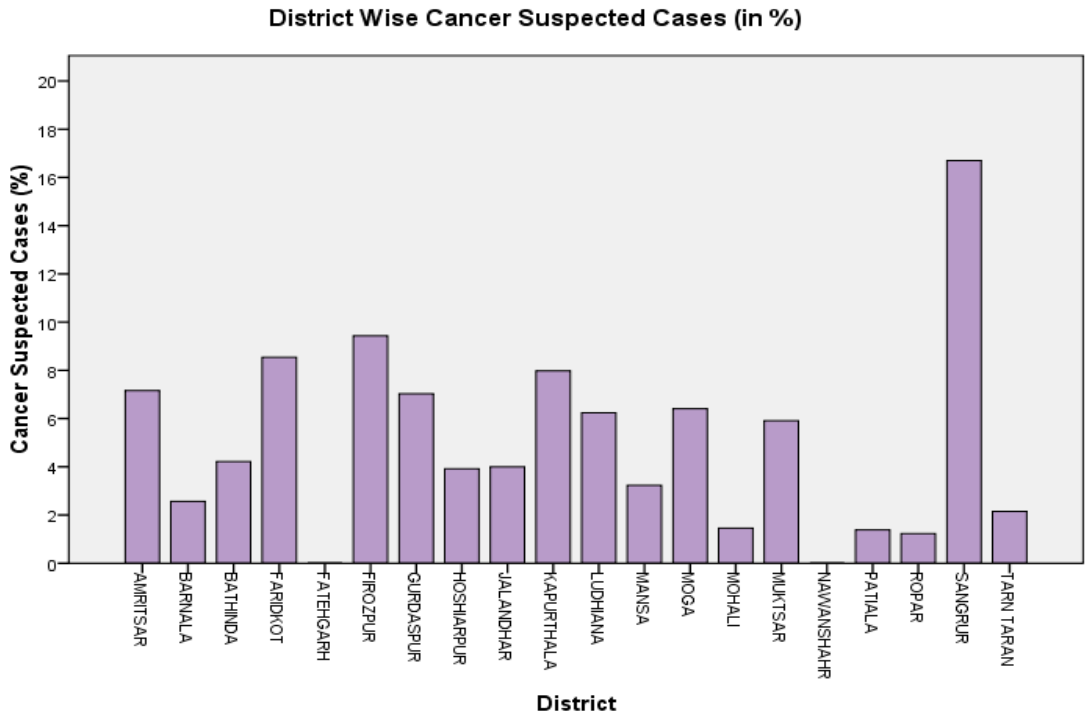


Fig 5- District Wise Cancer Suspected Cases Reported

On analysing the cancer deaths, cancer confirmed cases and cancer suspected cases for the last five years, it was seen that maximum of deaths due to cancer occurred in District Sangrur of Punjab followed by Ludhiana, Kapurthala, Firozpur and Amritsar.

Cancer confirmed Cases reported were again maximum in District Sangrur followed by Firozpur, Ludhiana, Faridkot and Gurdaspur.

Cancer Suspected Cases reported were also maximum for District Sangrur followed by Firozpur, Faridkot, Ludhiana and Amritsar.

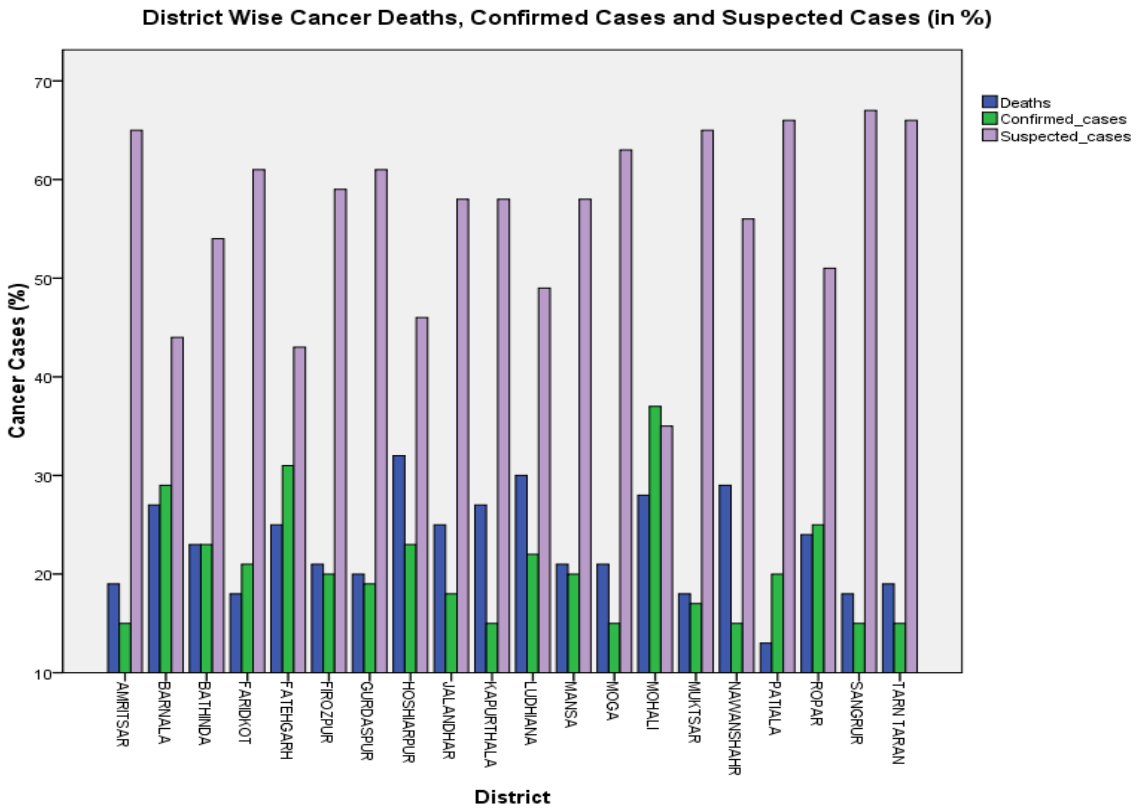


Fig 6- District Wise Cancer Deaths, Confirmed Cases and Suspected Cases Reported

On analysing the contribution of cancer deaths, confirmed cases and suspected cases to total cases for each of the district, it was seen that for all the districts, suspected cases were maximum and mostly contributing to more than 50% of total cases.

In some of the districts, cancer deaths were more while in some confirmed cases were more in number.

3.2 Gender Wise Analysis

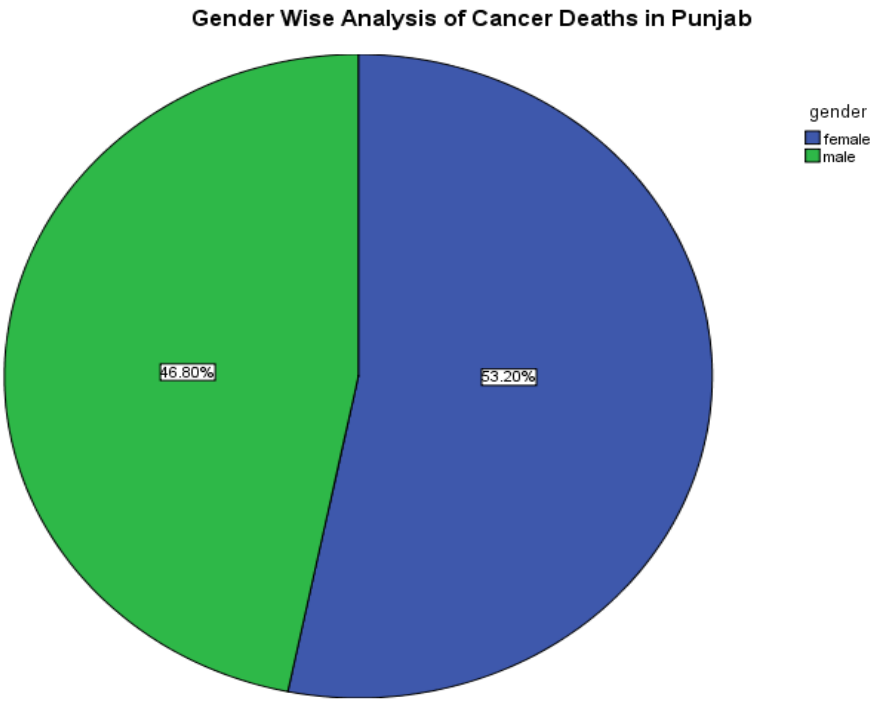


Fig 7- Gender Wise Analysis of Cancer Deaths in Punjab

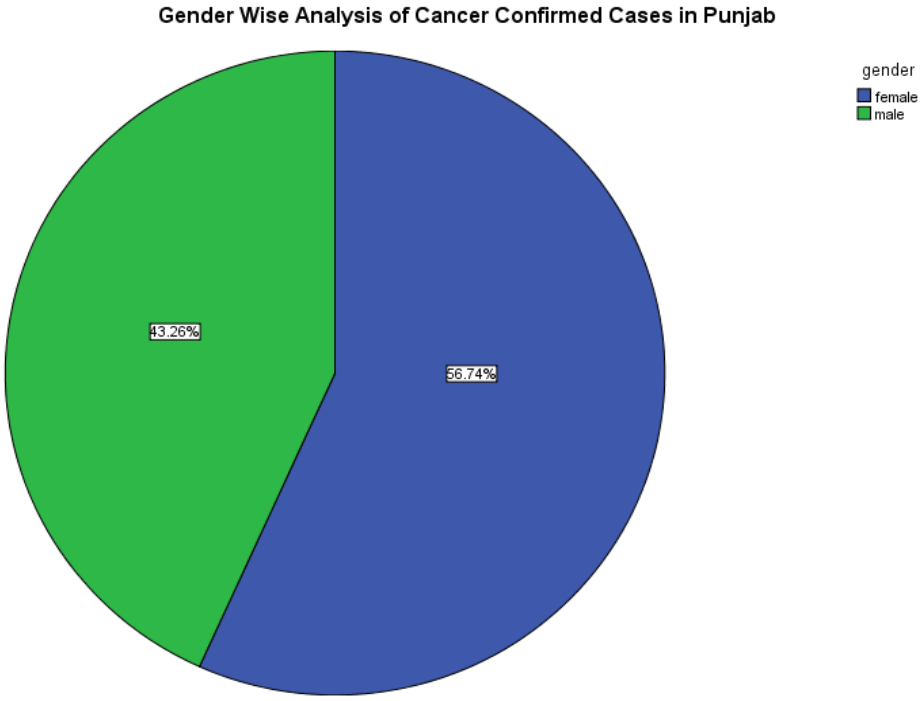


Fig 8- Gender Wise Analysis of Cancer Confirmed Cases in Punjab

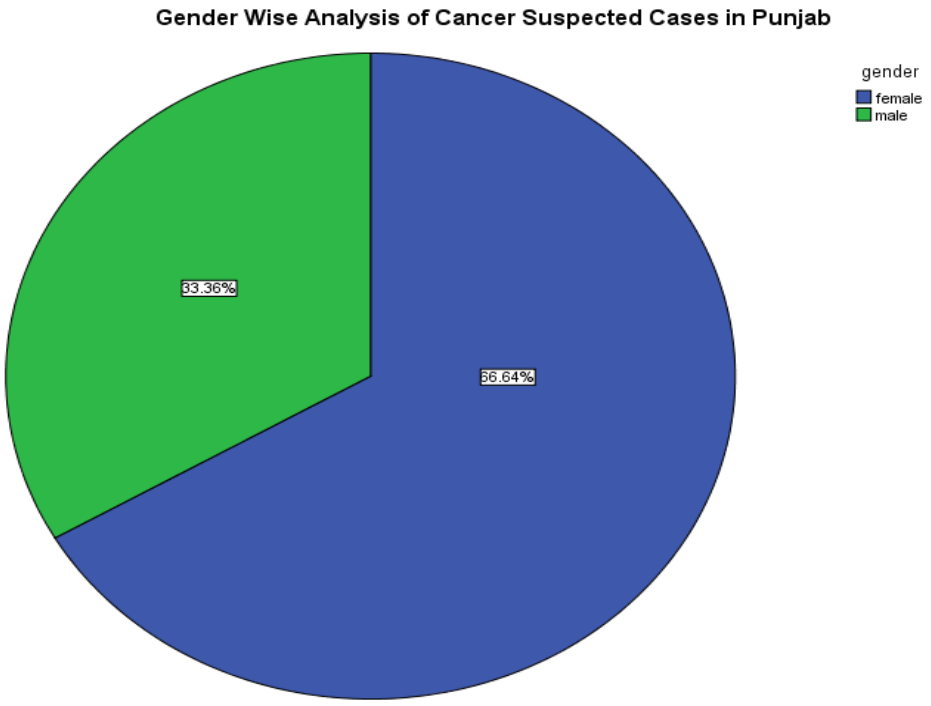


Fig 9- Gender Wise Analysis of Cancer Suspected Cases in Punjab

On gender wise analysis for the whole state, it was seen that the number of females suffering from cancer is more than that of males. 53% of the patients dying because of cancer in Punjab are females and 57% of patients suffering from cancer in Punjab are females. In case of people who have symptoms suspecting of cancer, 67% are females.

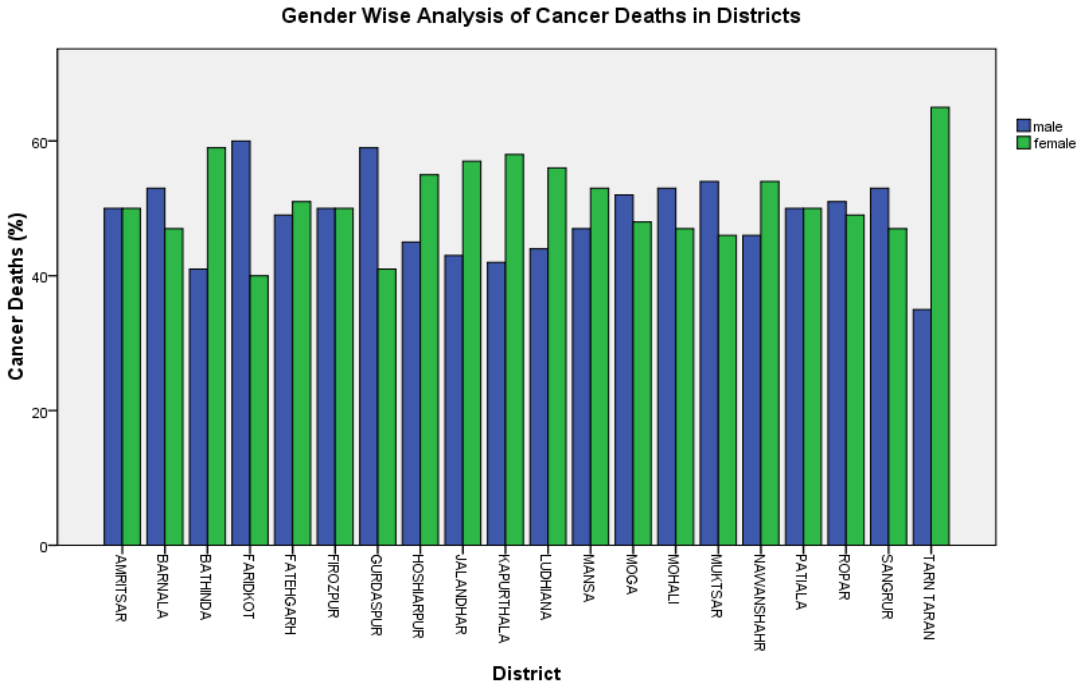


Fig 10- Gender Wise Analysis of Cancer Deaths in Districts

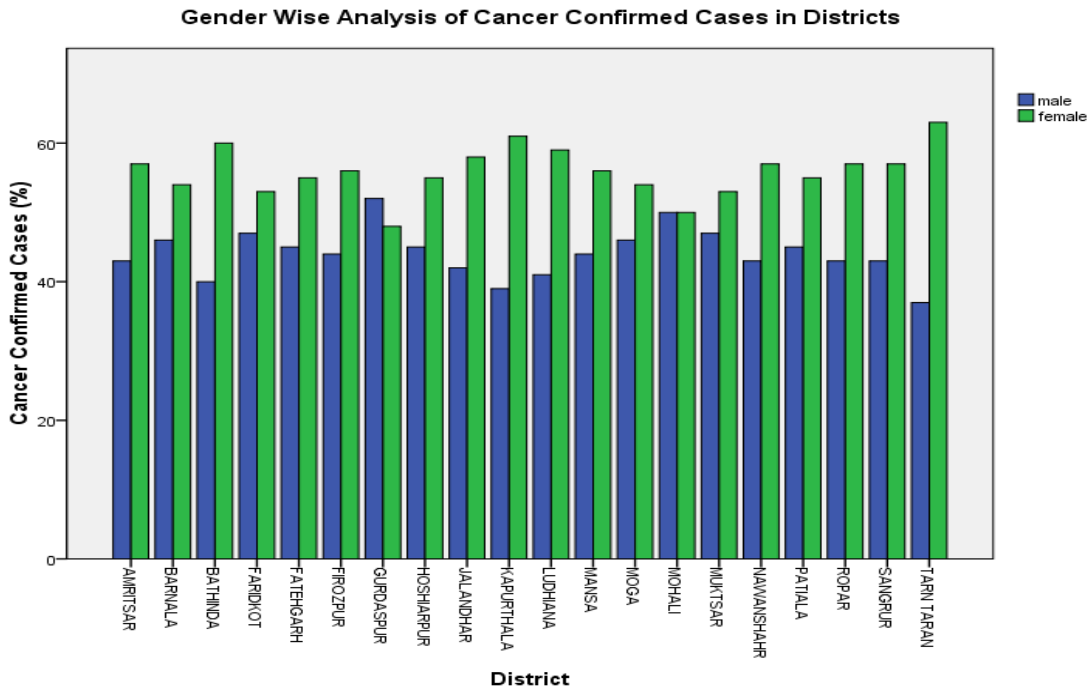


Fig 11- Gender Wise Analysis of Cancer Confirmed Cases in Districts

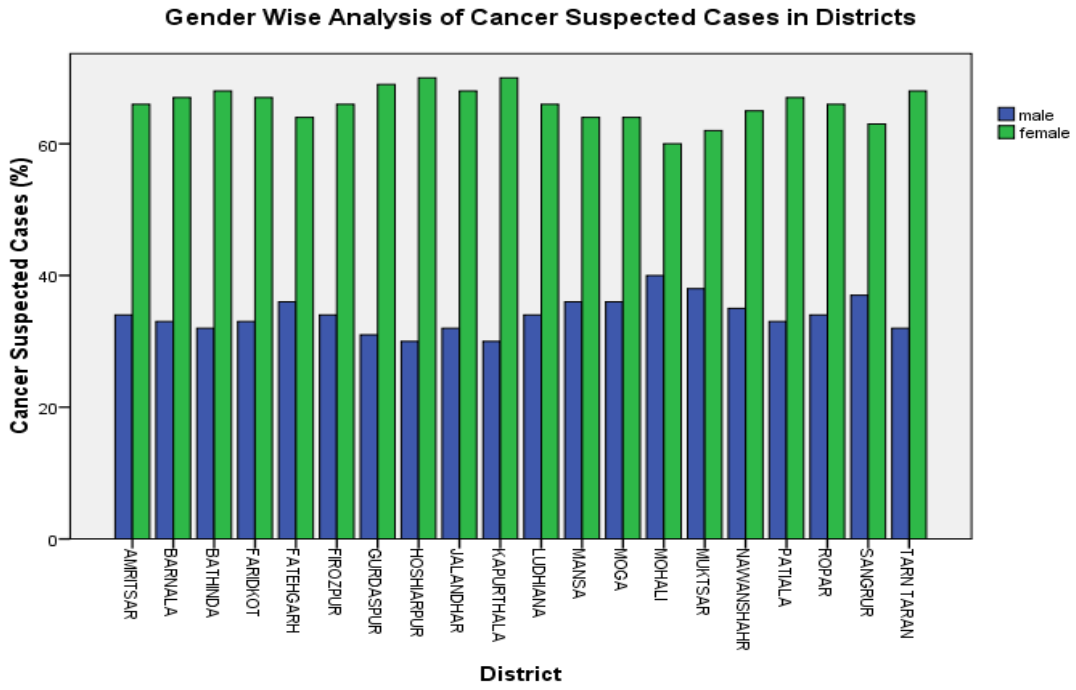


Fig 12- Gender Wise Analysis of Cancer Suspected Cases in Districts

On doing the gender based analysis for each of the districts, a different scenario is seen for cases dying of cancer. In 9 of the districts females who died of cancer are more while in 9 of them, males are more in percent. In 2 of the districts cancer deaths in males and females are almost equal.

In cancer confirmed cases, female's percent is more than males in most of the districts while in cancer suspected cases, females are much more in count than that of males for all the districts of Punjab.

3.3 Age-group Wise Analysis

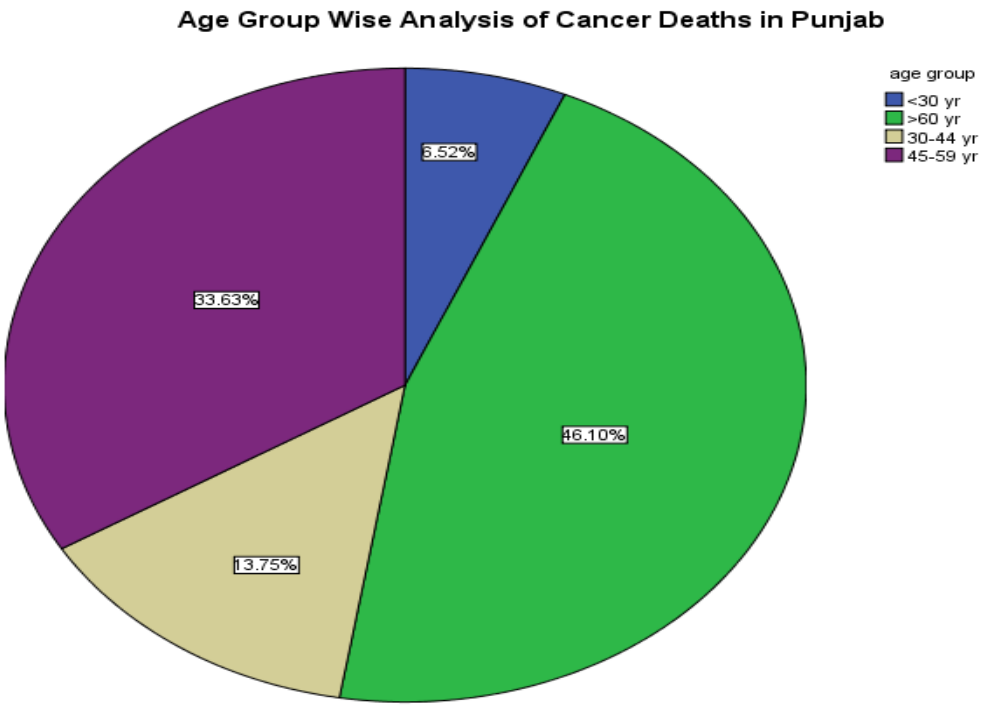


Fig 13- Age Group Wise Analysis of Cancer Deaths in Punjab

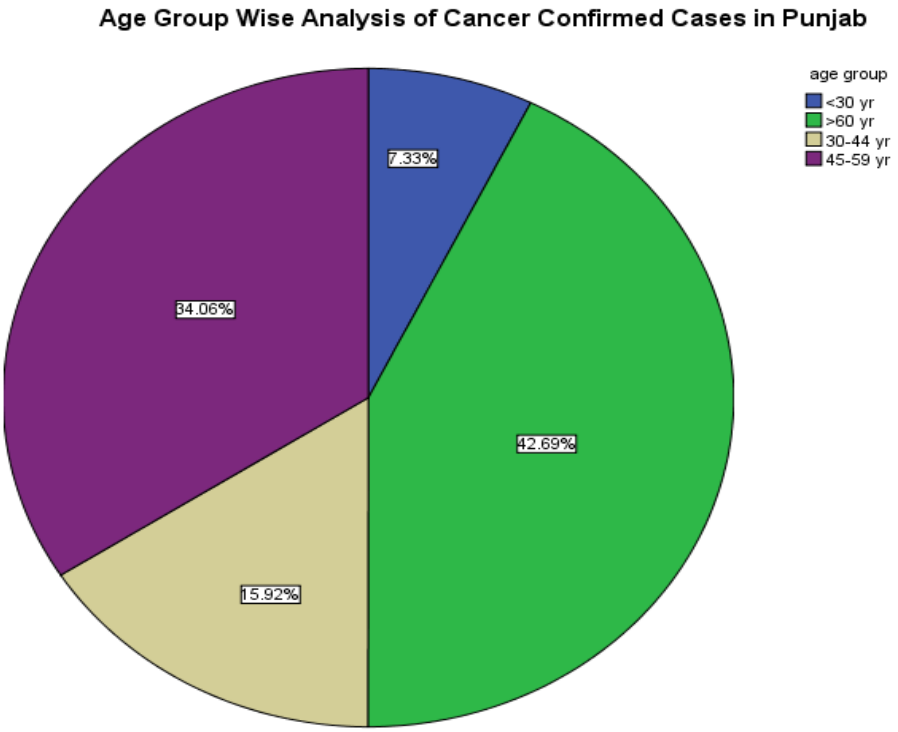


Fig 14- Age Group Wise Analysis of Cancer Confirmed Cases in Punjab

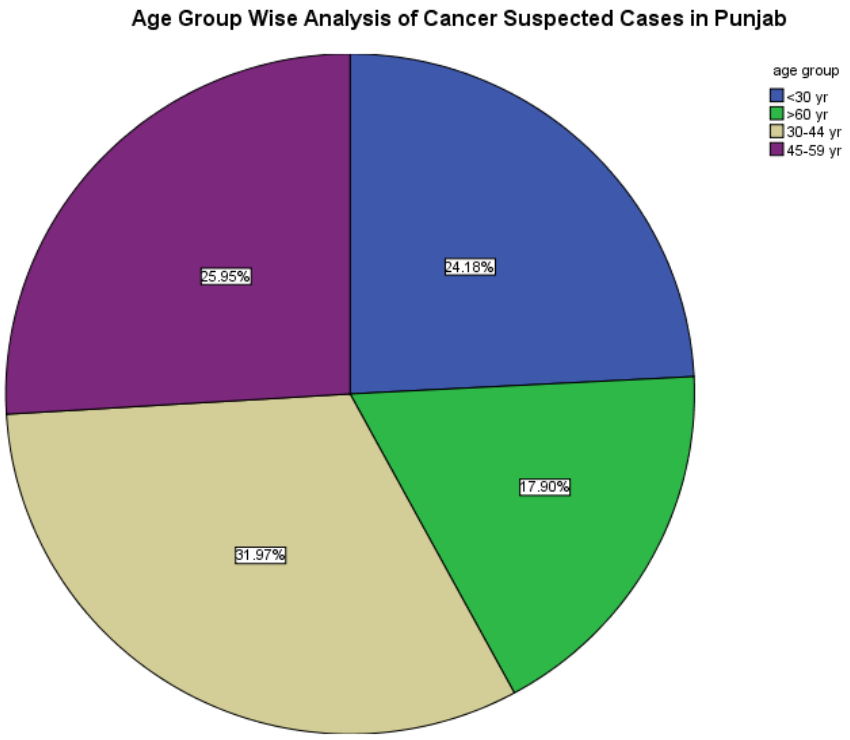


Fig 15- Age Group Wise Analysis of Cancer Suspected Cases in Punjab

On age group wise analysis for the whole state, in patients dying because of cancer and those suffering of cancer, similar trend is seen. Cases are maximum in age group more than 60 yrs, followed by 45-59 yrs, then 30-44 yrs and then less than 30 yrs.

In case of cancer suspected cases, maximum cases are reported in age group of 30-44yrs, followed by other age groups.

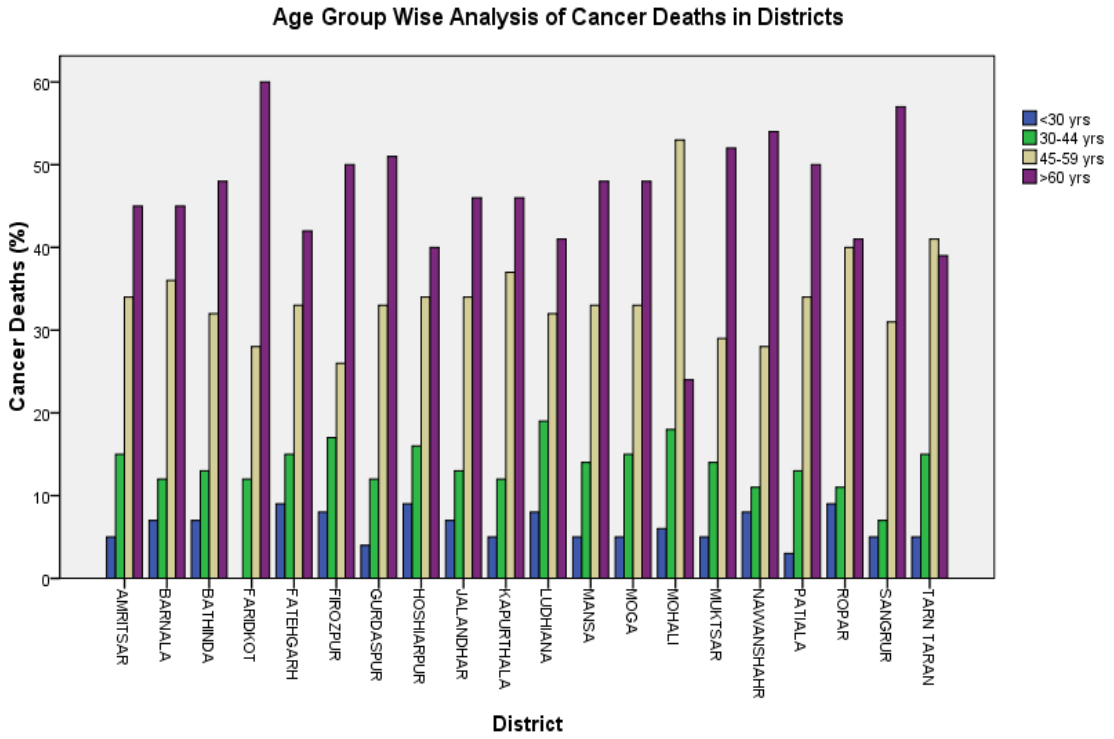


Fig 16- Age Group Wise Analysis of Cancer Deaths in Districts

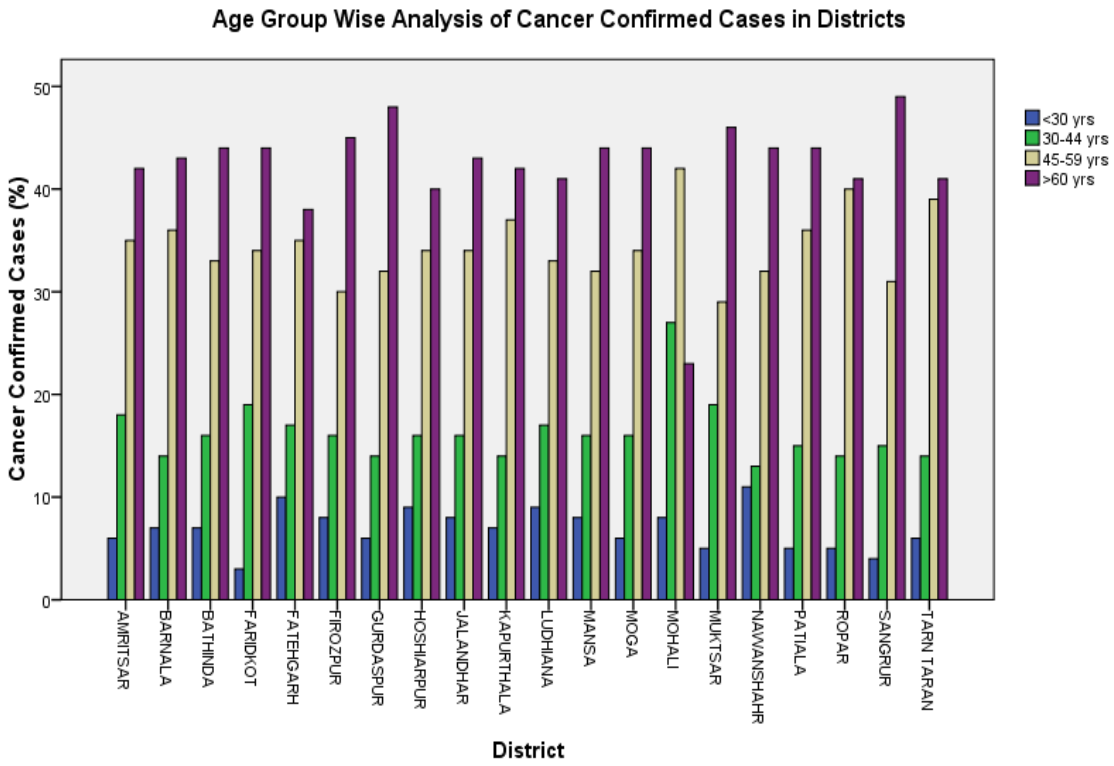


Fig 17- Age Group Wise Analysis of Cancer Confirmed Cases in Districts

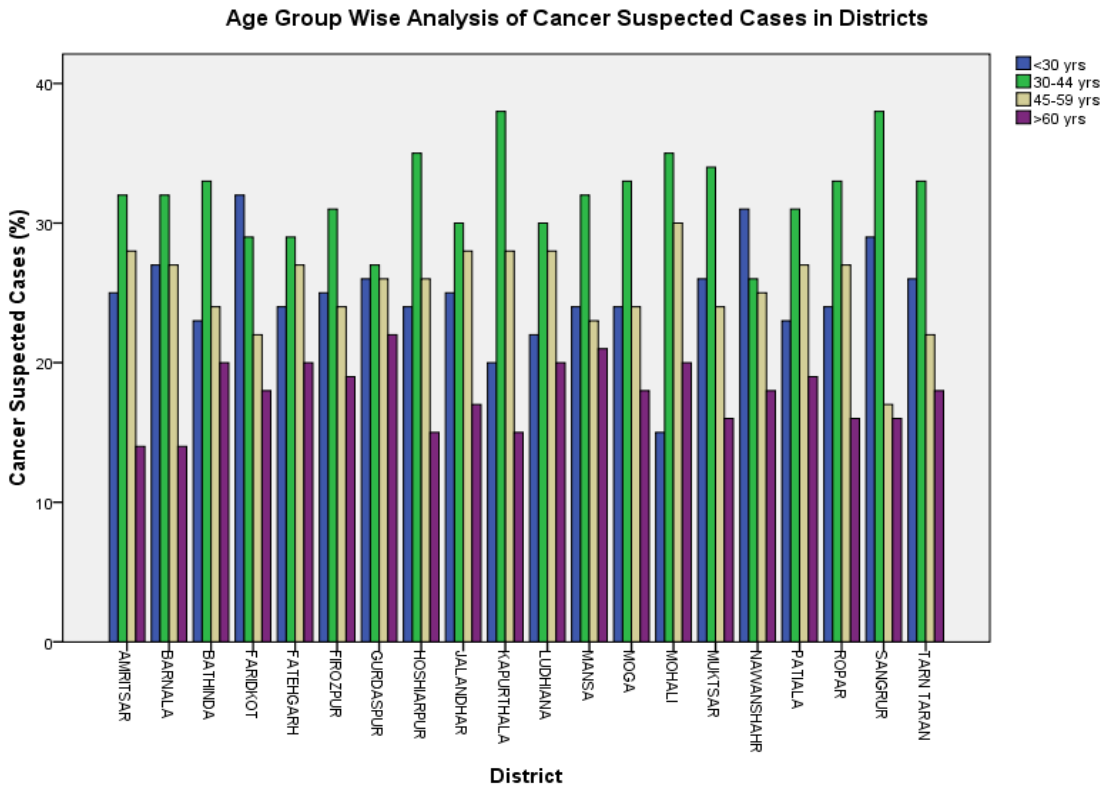


Fig 18- Age Group Wise Analysis of Cancer Suspected Cases in Districts

On age group wise analysis for all districts of Punjab, similar trend was seen as that of state. Cancer deaths and Confirmed cases were more for older age groups decreasing with the reducing age groups.

3.4 Organ Wise Analysis

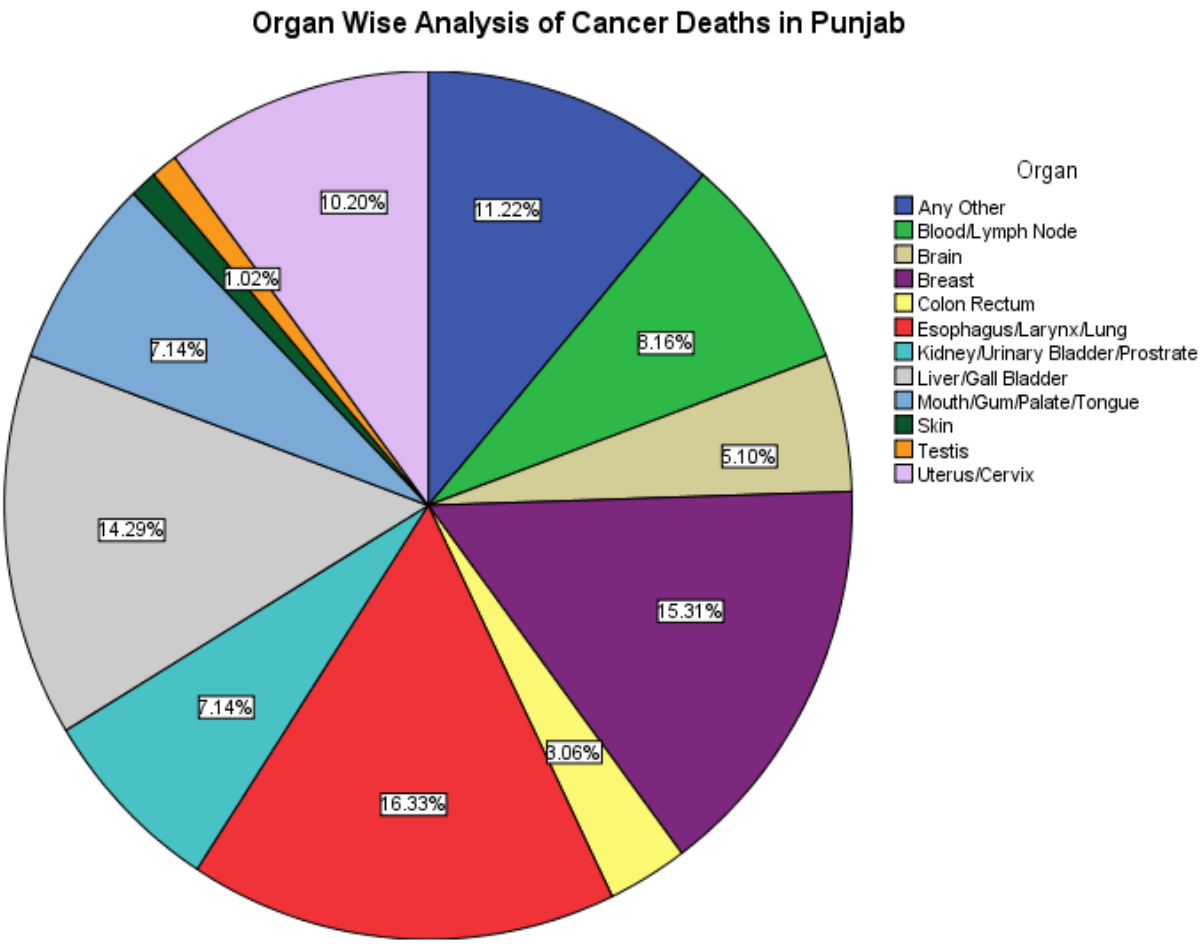


Fig 19- Organ Wise Analysis of Cancer Deaths in Punjab

On analysing organ where cancer was diagnosed leading to death of patients, maximum deaths occurred in cancer of oesophagus/larynx/lungs followed by breast cancer and lung cancer.

Uterus/ Cervix cancer, Kidney/Urinary Bladder/ Prostate Cancer, Mouth/ Gum/ Palate Cancer were also major reasons for death of patients.

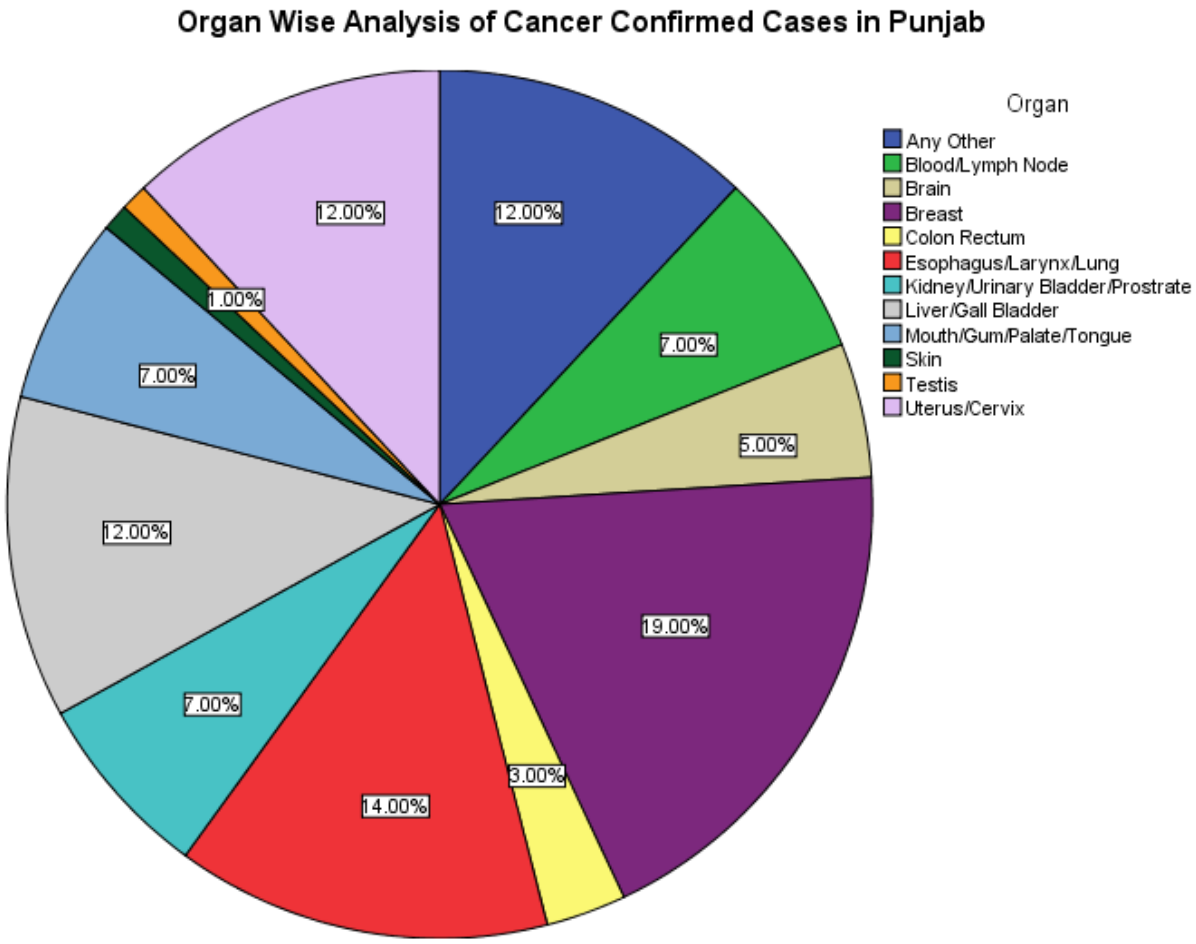


Fig 20- Organ Wise Analysis of Cancer Confirmed Cases in Punjab

On analysing the organ wise cancer confirmed cases, it was seen that maximum of cancer cases are suffering of breast cancer followed by Oesophagus/Larynx/Lung Cancer. Uterus/Cervix Cancer and Liver/Gall Bladder Cancer also contribute majorly to cancer prevalence in the state.

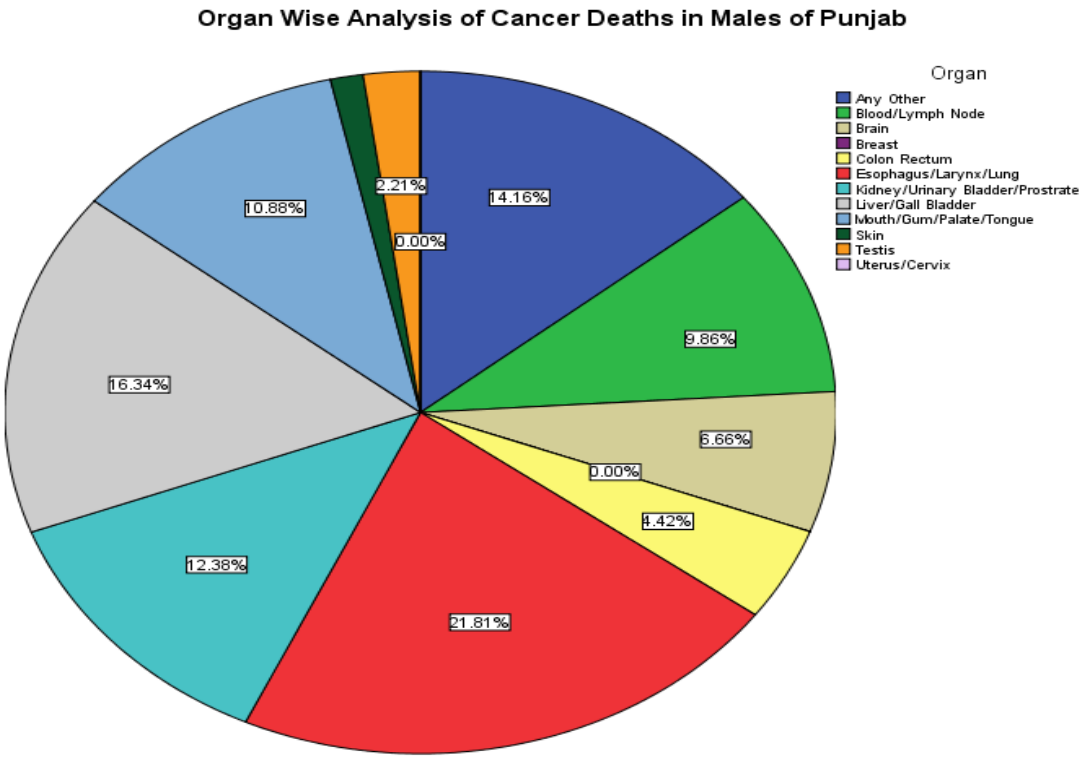


Fig 21- Organ Wise Analysis of Cancer Deaths in Males of Punjab

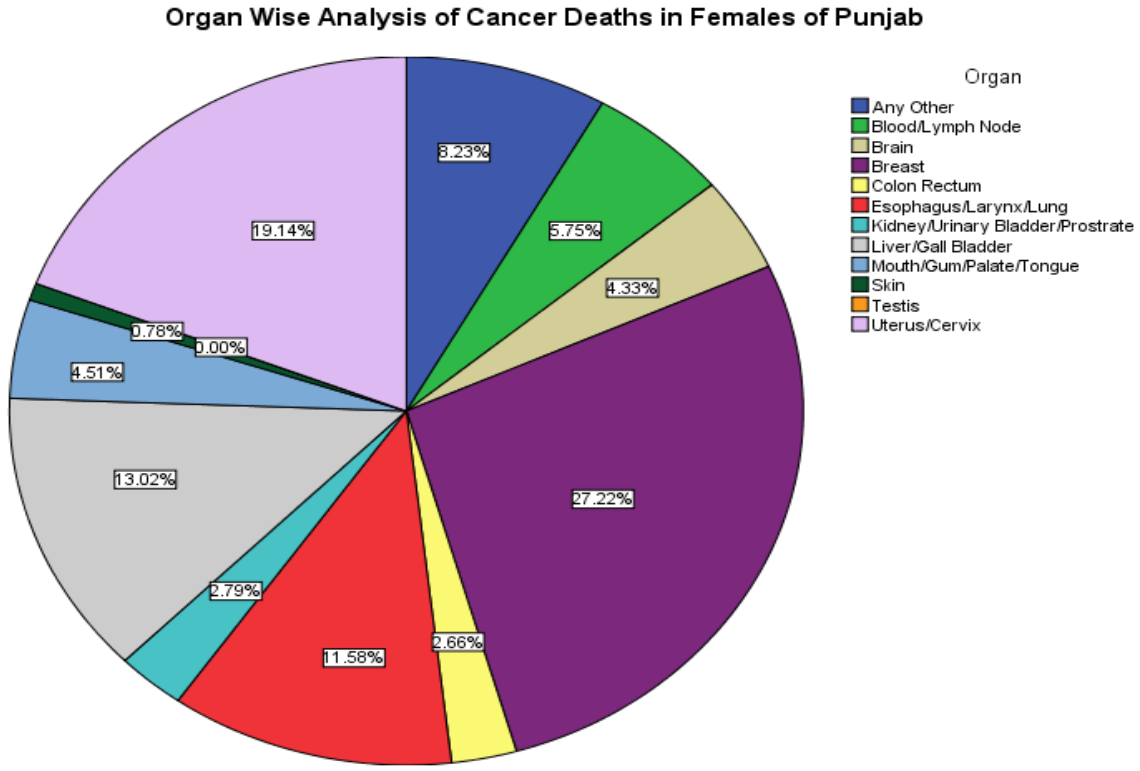


Fig 22- Organ Wise Analysis of Cancer Deaths in Females of Punjab

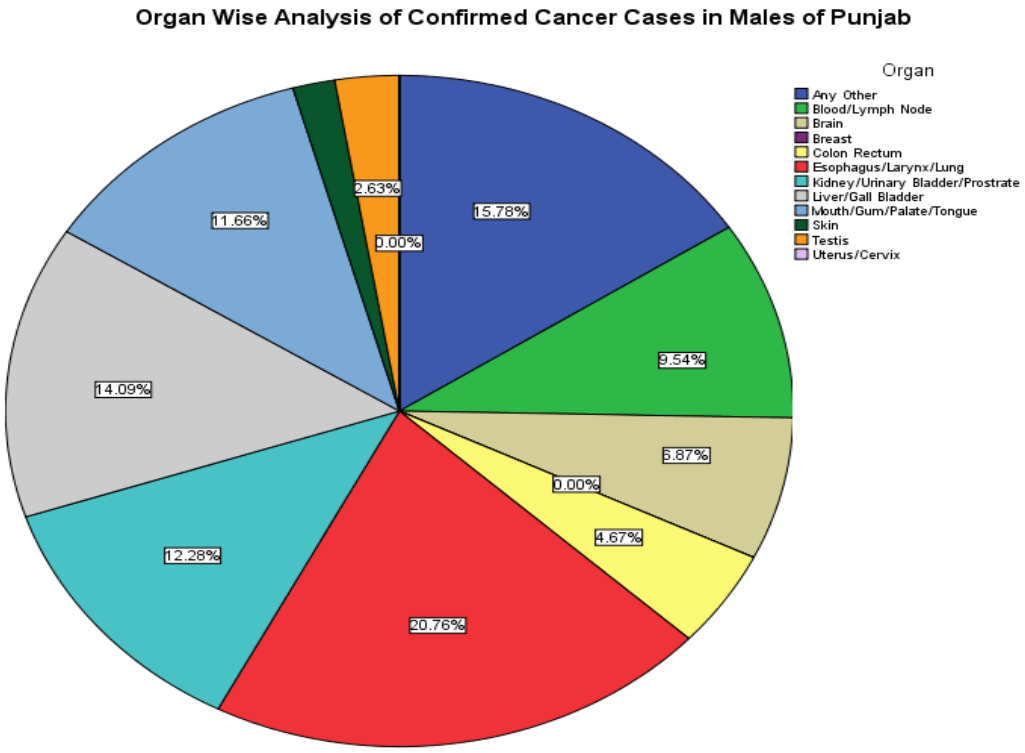


Fig 23- Organ Wise Analysis of Cancer Confirmed Cases in Males of Punjab

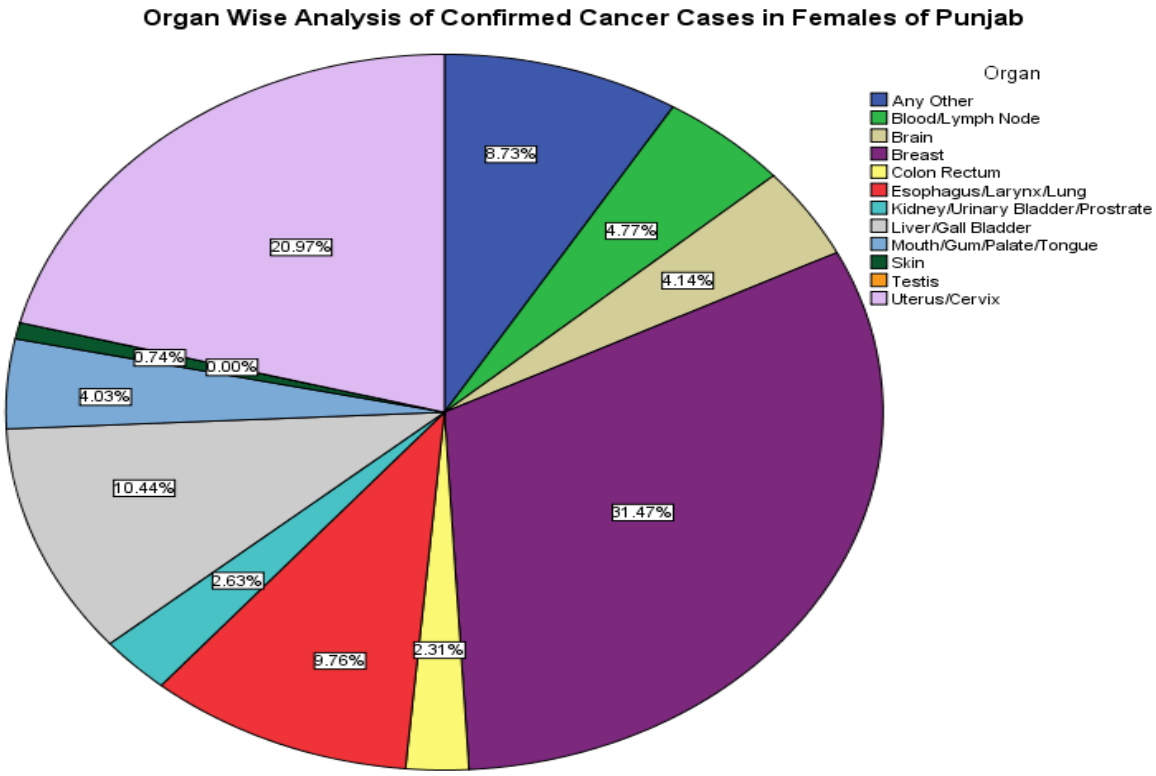


Fig 24- Organ Wise Analysis of Cancer Confirmed Cases in Females of Punjab

In males, the maximum cause for cancer deaths was reported to be Oesophagus/Larynx/Lung Cancer followed by Liver/Gall Bladder Cancer.

While in females, the maximum cause for cancer deaths was reported to be Breast Cancer followed by Uterus/Cervix Cancer.

In case of cancer confirmed cases, similar trend as that of cancer deaths was seen in both males and females.

3.5 Urban Rural Analysis

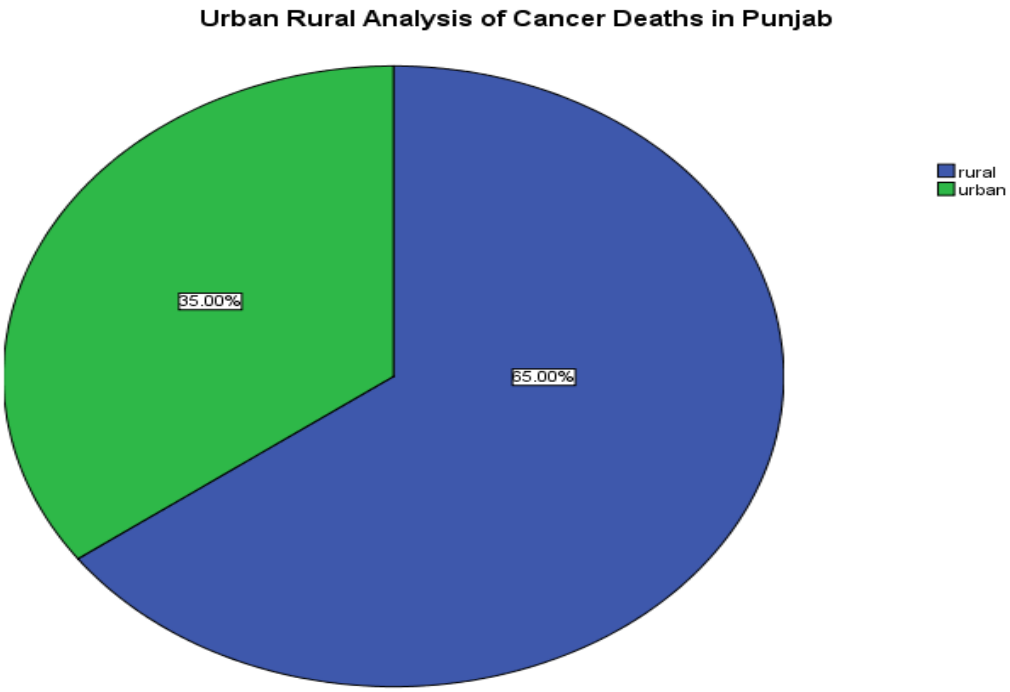


Fig 25- Urban Rural Analysis of Cancer Deaths in Punjab

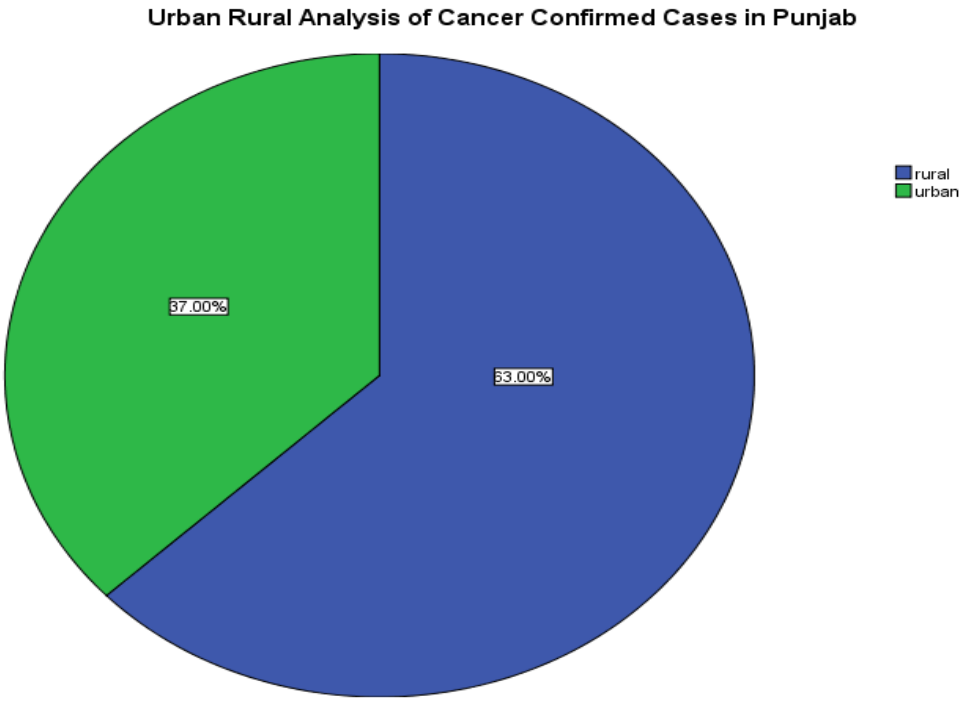


Fig 26- Urban Rural Analysis of Cancer Confirmed Cases in Punjab

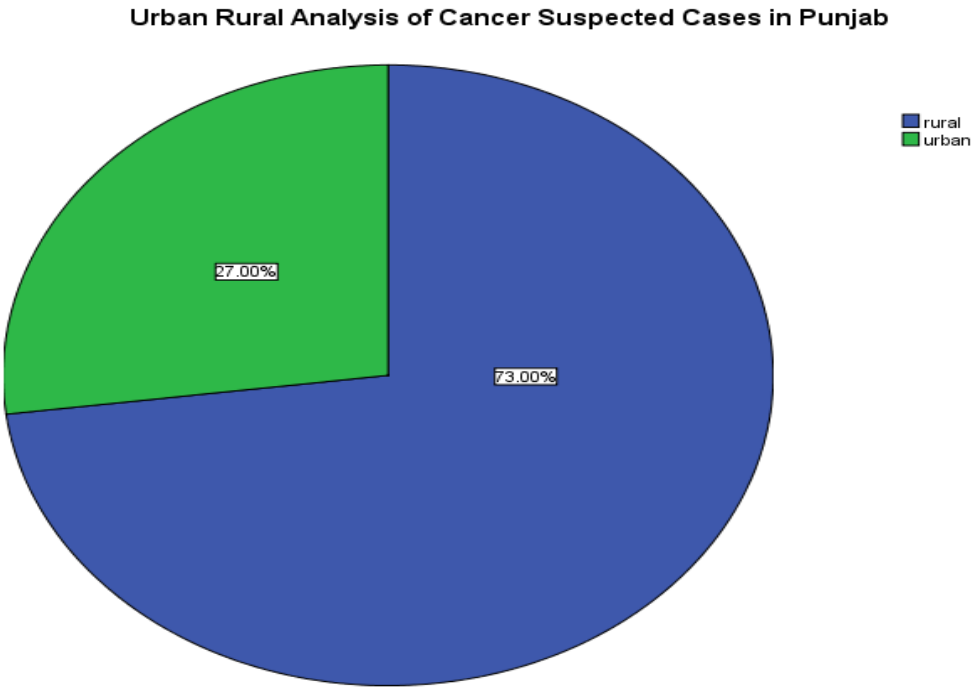


Fig 27- Urban Rural Analysis of Cancer Suspected Cases in Punjab

On analysing the organisation unit wise cancer cases reported, the cases recorded were classified as urban or rural based on the organisation unit from where the cases were reported. Nursing colleges, district hospitals were all included in urban area while all the SC, PHC etc in different blocks of a district were included in rural area.

Cases reported from rural area were much higher in number as compared to those recorded in urban for all the three categories, cancer deaths, confirmed cases and suspected cases.

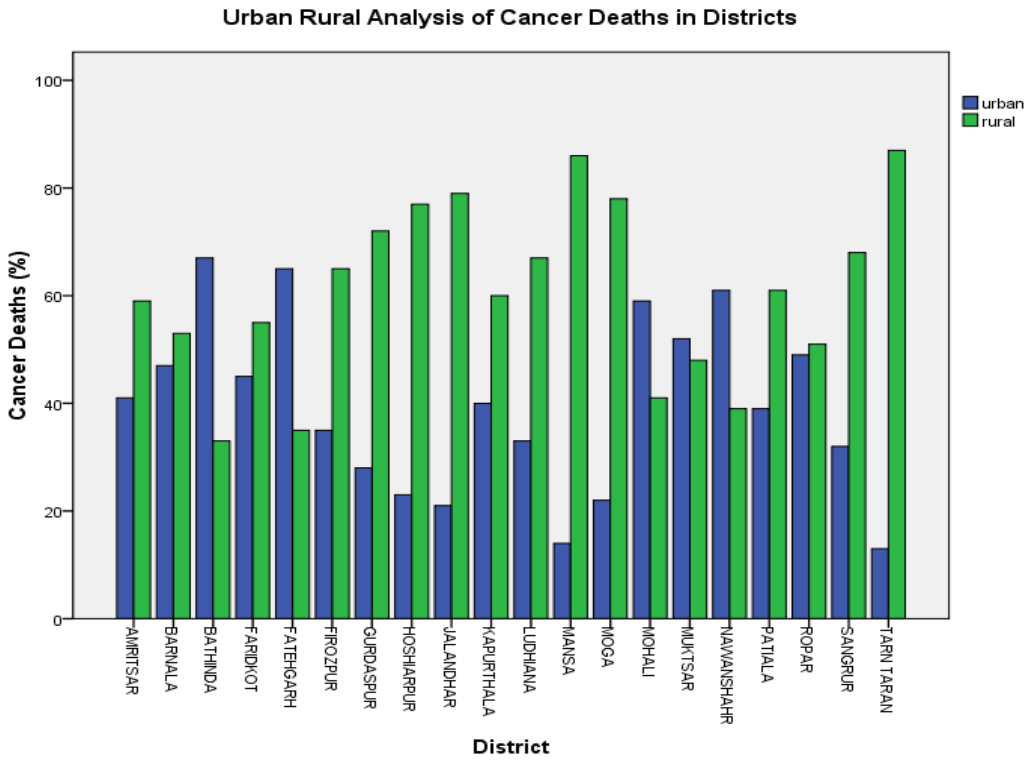


Fig 28- Urban Rural Analysis of Cancer Deaths in Districts

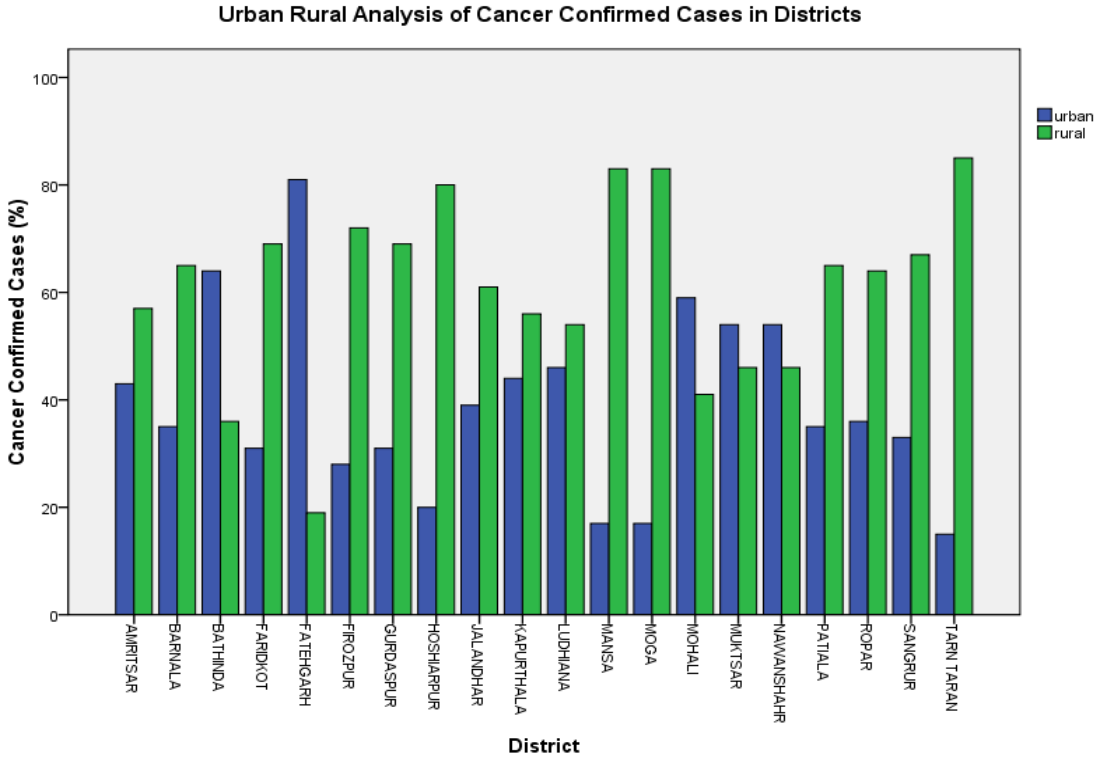


Fig 29- Urban Rural Analysis of Cancer Confirmed Cases in Districts

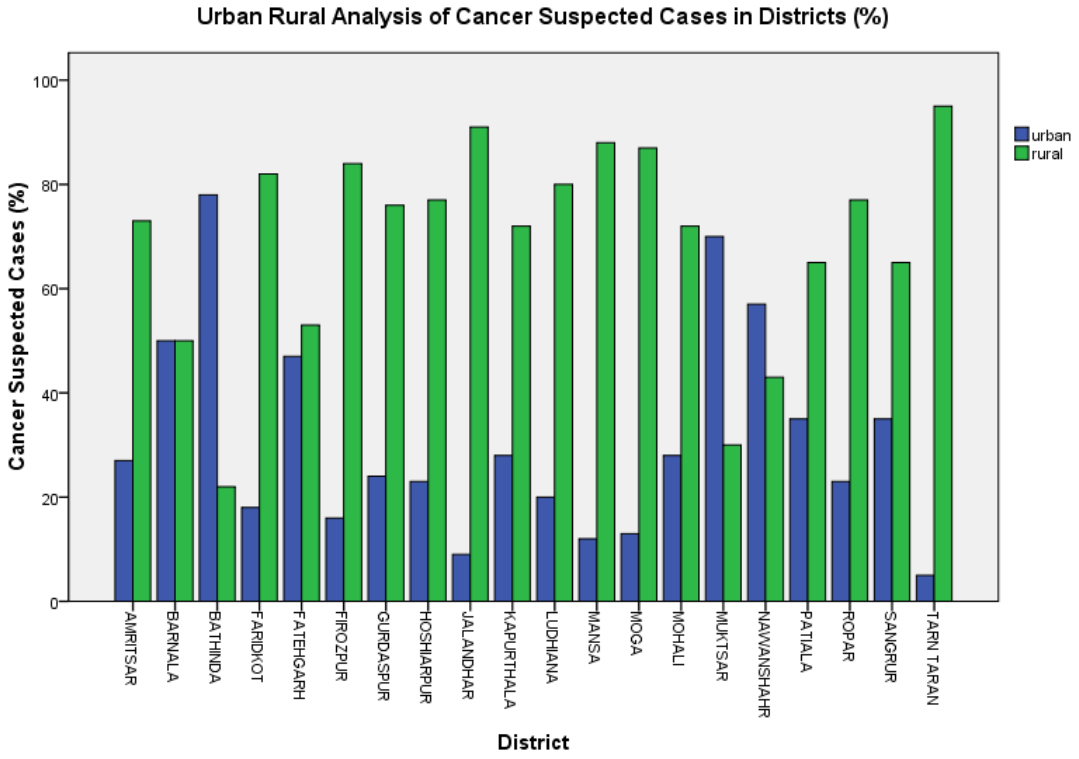


Fig 30- Urban Rural Analysis of Cancer Suspected Cases in Districts

For most of the districts, similar trend as that of state was seen. Cases reported through rural area were much greater in number as compared to that reported by urban area.

For districts Bathinda, Fatehgarh, Mohali, Muktsar and Nawanshahr, cases reported in urban area were greater than that of rural area.

3.6 Analysis of Gap between cancer data reported in DHIS and that reported by SHSRC through their survey.

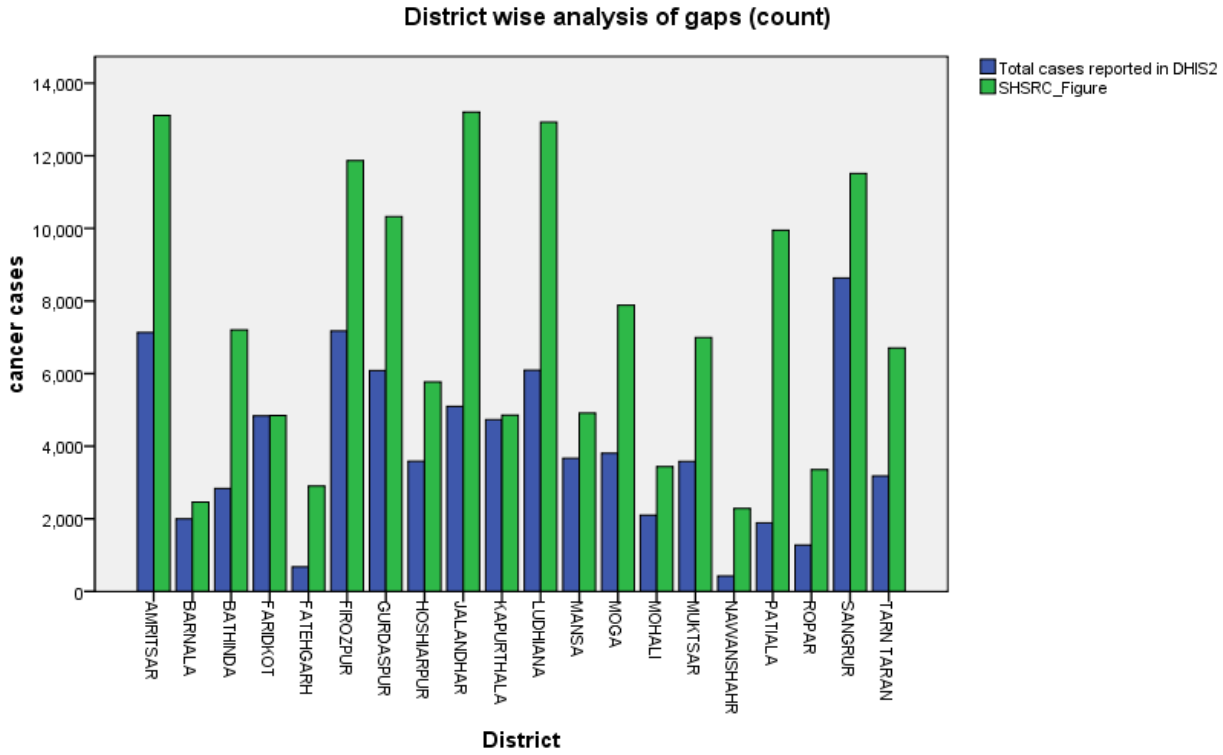


Fig 31- District Wise Analysis of Gap (Count)

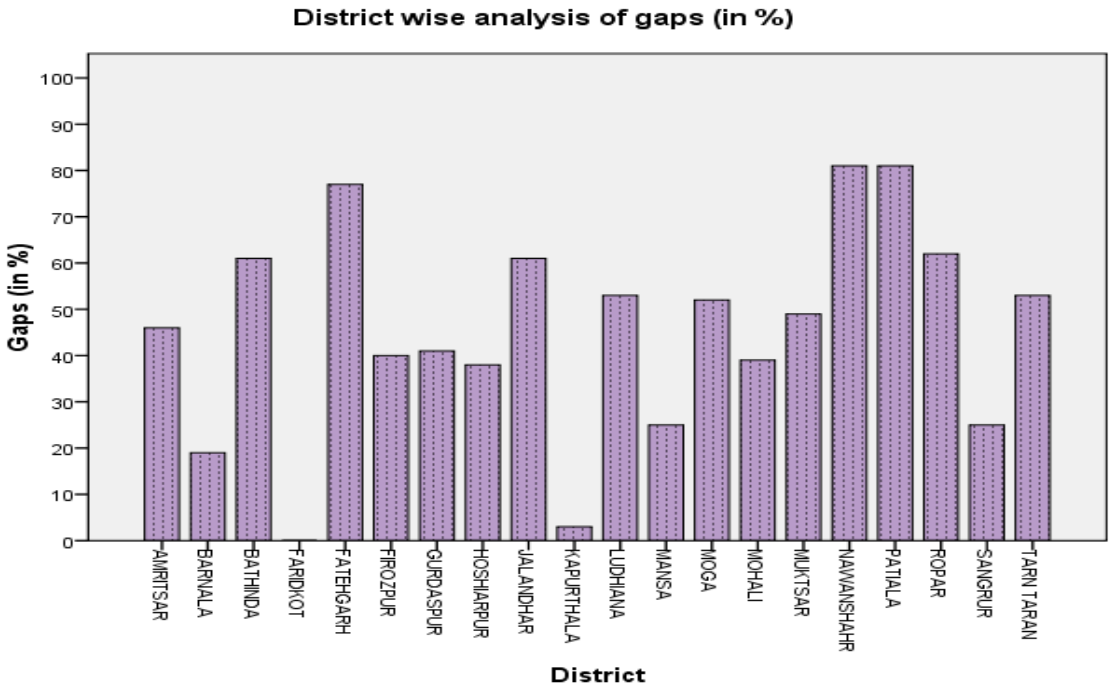


Fig 32- District Wise Analysis of Gap (in %)

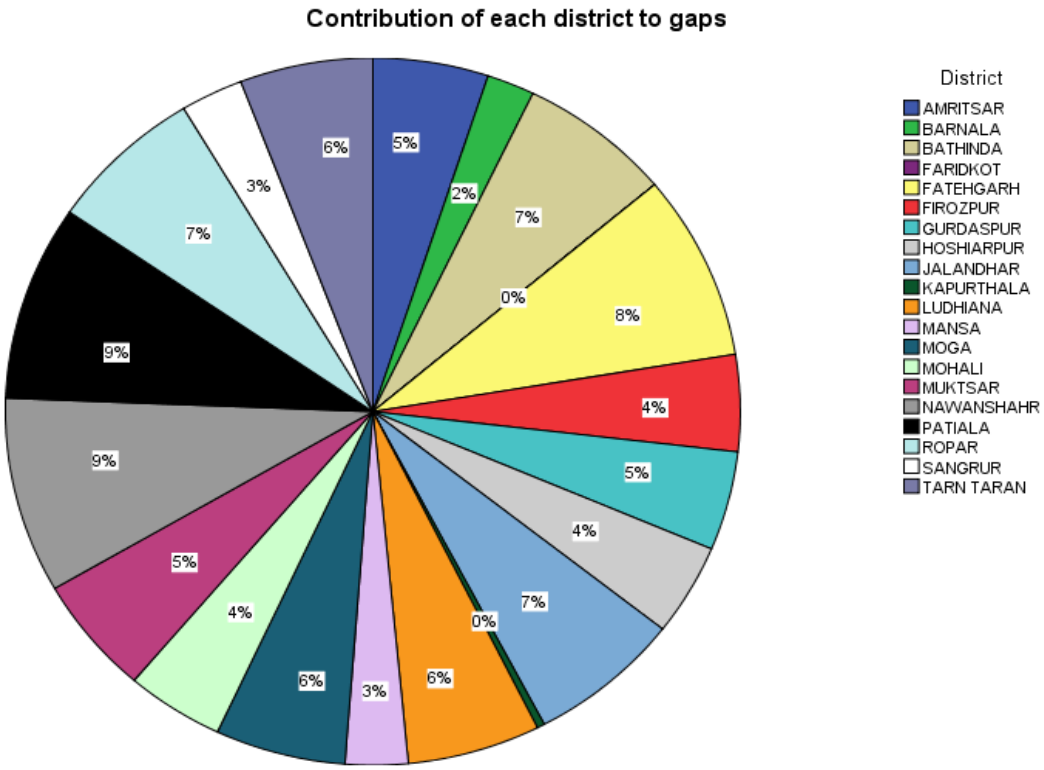


Fig 33- District Wise Contributions to Gap

The cancer data reported in DHIS was checked for quality and the difference between data reported was compared to the figure given by SHSRC through their own survey.

It was seen that around 80% of the data was missing was missing for Fatehgarh, Nawanshahr and Patiala followed by Ropar, Jalandhar and Patiala where around 60% was missing.

In most of the districts missing data was very high. Only in Faridkot and Kapurthala, the missing data was less than 5%.

On analysing the districts leading to large gaps, Nawanshahr and Patiala contributed each to 9% of gaps followed by Fatehgarh (8%), Ropar and Bathinda (7%).

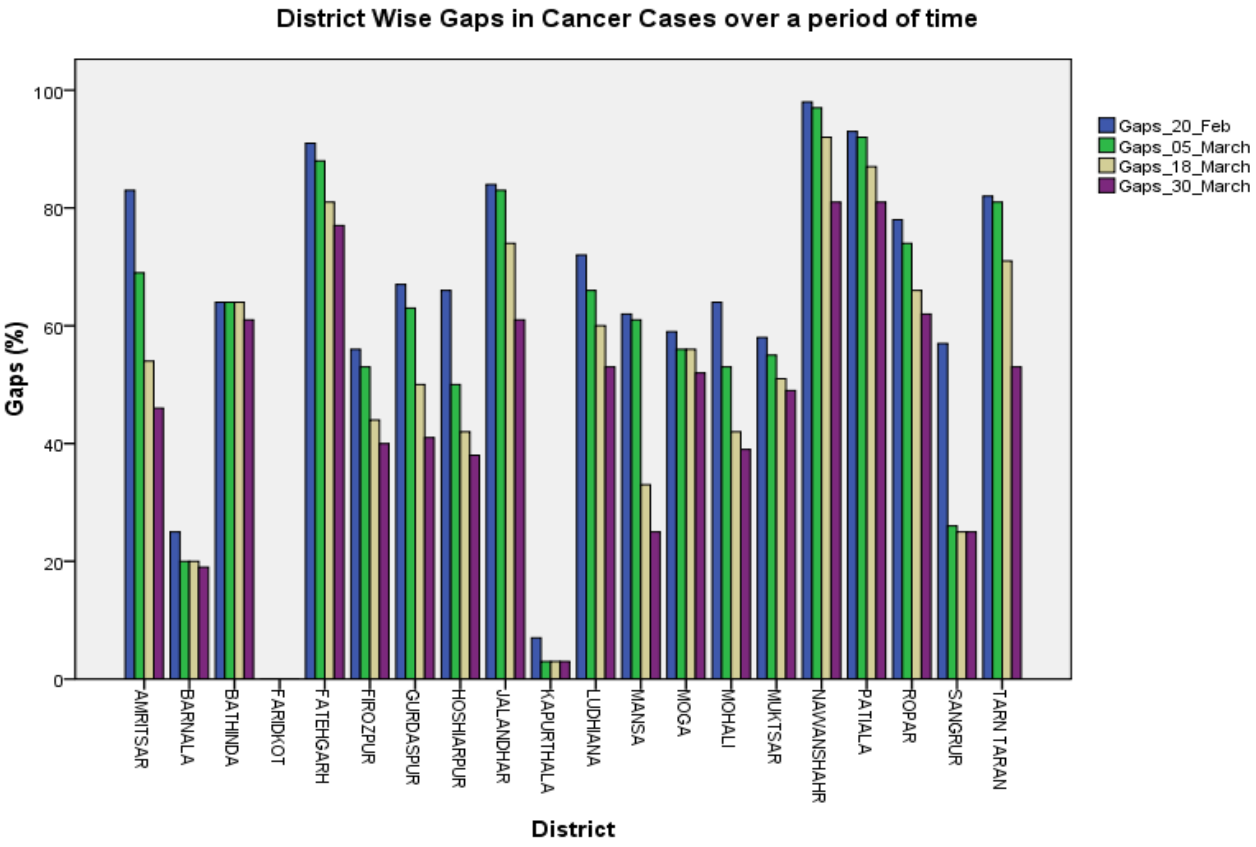


Fig 34- District Wise Gaps in Cancer Cases over a period of time

The gaps in data were analysed for a period of time, every 10-15 days to see the progress in reporting of data. It was seen that the gaps were reducing for most of the districts. However, the reporting was continuously very low for Bathinda, Fatehgarh, Nawanshahr and Patiala.

Chapter 4- Discussion

The data collected in CAC in Punjab was analysed under different categories and findings generated as shown in the form of graphs in the previous chapter.

The analysis of cancer deaths, confirmed cases and suspected cases shows that a large population is suspected to have cancer, for which spreading awareness and early detection is very essential to provide prompt treatment which can save their lives. Of the total cancer cases recorded, 20% of the people have died because of cancer and number suffering from cancer is mostly below from those dying of it, that shows the decreasing life expectancy after cancer diagnosis.

The analysis of cancer cases based on gender, shows the high prevalence in females for cancer deaths, cancer confirmed cases and suspected cases. The difference is particularly high in suspected cases directing to further increasing trend in cancer among females in future.

The main organs leading to cancer in females are breast and uterus/cervix. Large focus is to be placed towards preventing breast cancer and uterus/cervix cancer in females which would markedly reduce the cancer prevalence in females.

The main organs leading to cancer in males are Oesophagus/Larynx/Lung Cancer followed by Liver/Gall Bladder Cancer.
These organs also contribute to maximum of cancer cases in the state and thus need attention on priority basis.

Age group wise analysis depicts that the cancer deaths and confirmed cases are more among the older age groups while suspected cases are more in age group of 30-44 years.
More deaths at age more than 45 years may be due to poor follow up for cancer patients and depicts major decrease in the life expectancy for most of the cancer patients.

Most of the cases of cancer were reported from rural area as compared to urban area. Thus, that depicts that rural areas have a higher prevalence of cancer as compared to urban areas. However, for few of the districts urban area reported more of the cancer cases.

While assessing data quality, it was seen that for few records, male was diagnosed with breast or uterus cancer and females diagnosed with testis cancer. These cases were then highlighted and corrected through coordination with respective organisation units, thus the data quality was improved.

The data collected was compared to the data figure given by SHSRC, and the gaps were analysed. A large amount of data was not reported in DHIS and there was a large difference in both the figures. The gaps were identified and district managers were motivated to fill the gaps on an early basis. A workshop was organised where training was given again, all the issues were discussed and resolved. This had an impact and the data inputs from the districts started accelerating. Thus the reduction in gaps over a period of time was monitored. Districts which were still under performing were motivated to fasten the process so that data can be completed on an early basis.

On analysing the reasons for the records not entered, the major issue was server down time which was because of poor UPS back up and long power cuts in DIT, Punjab.
Another issue was changes in human resources concerned leading to need for re training for those organisation units.

The limitations of the study are-

- The data analysed is limited to data available and compiled till March 30th, 2013.
- The data for fertilizer handled and risk factors could not be analysed as these fields were not entered in most of the records.

Chapter 5- Conclusion and Recommendations

From the data analysis for CAC, Punjab, it can be concluded that there is an urgent need for symptom based early detection of cancer in the state as the suspected cases are large in number. The cases suspected for cancer should be motivated for referral and to start treatment on an early basis.

As cancer is more prevalent in females because of the high risk of breast or uterus cancer in them, more campaigns should be organised on awareness of females to follow precautions and prevent risk factors that may lead to such cancers. There is also an increasing prevalence of Oesophagus/Larynx/Lung Cancer, Kidney/Urinary Bladder/ Prostate Cancer and Mouth/ Gum/ Palate Cancer. So the CAC should focus on increasing awareness against these cancers and should prioritise accordingly.

The patients diagnosed with cancer should be motivated for follow up and funds should be allotted by government for those needy, so that they can take required treatment. Thus, the life expectancy can be increased to prevent deaths in early age.

There is a need to provide more health facilities and awareness campaigns in rural areas as the cancer cases are more in rural areas as compared to urban areas.

Considering a large gap in cases reported, a workshop was arranged to train and motivated the concerned resources. That had an impact and cancer reporting was accelerated after that. Thus, such workshops are an important measure to keep the human resources involved and motivated.

Another major issue is server down time. There is a need to upgrade the server as well as the UPS for server as long power cuts is the major reason for server downtime.

Considering the limitations of the study, the resources involved in doing the entries should be explained the importance of filling up all the details for the records. This will thus help in analysing the relation between risk factors involved or fertilizers handled and the type of cancer diagnosed.

Since there is a large percent of data missing, so further analysis can be done after all the data has been reported to reach on concrete conclusions for cancer load in the state.

References

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2. Epidemiological Study of High Cancer among Rural Agricultural Community of Punjab in Northern India, J. S. Thakur, B. T. Rao, Arvind Rajwanshi, H. K. Parwana and Rajesh Kumar, *Int. J. Environ. Res. Public Health* 2008, *5(5)* 399-407

3. Cancer Scenario in India with Future Perspectives, Research Article, Imran Ali, Waseem A. Wani and Kishwar Saleem, Cancer Therapy Vol 8, 56-70, 2011

4. Most cancer patients in India die without medical attention: study, Sonal Matharu, Mar 29, 2012, *'It is a myth that cancer is prevalent only in urban areas' (*http://www.downtoearth.org.in/content/most-cancer-patients-india-die-without-medical-attention-study)

Appendix 1

Performa 1

Government of Punjab

Department of Health & Family Welfare and Medical Education and Research

Cancer Awareness & Symptom Based Early Detection, State Wide Campaign

District | | Block/Tehsil | | Field Worker Code | |

Village/Town | | Patti/Agwar/Vehra/Dhani/Ward/Basti/Colony/Nagar | |

SN	H.No	Name	Age in Years				Sex		Married		Is anyone suffering from Cancer		Death with cancer in last 5 years ?		Any member having symptom (code)
			<30	30-44	45-59	≥60	Male	Female	Yes	No	Yes	No	Yes	No	
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															

Appendix 2

Performa 2

Unique ID..... Form Serial No.....

Government of Punjab

Department of Health & Family Welfare and Medical Education and Research

Cancer Awareness and Symptom Based Early Detection, State Wide Campaign

Individual Proforma-2

(To be filled for only those who have cancer or death due to cancer or having any sign/symptoms of cancer or have recovered of cancer)

1. District Code		2. Block Code	
3. Village/City Code		4. Ward Code or Name	
5. Household No.		6. Field Worker Code	

7. Name		8. Father/Husband Name		
9. Contact No.		10. Sex	1) Male	2) Female
11. Age	1) Less than 30	2) 30-44	3) 45-59	4) 60 or above

12. Has Cancer been confirmed by Diagnosis 1) Yes 2) No

13. If No, then do you have any of the following Symptoms

Only for those who have symptom but diagnosis has not been done	
Common Symptoms	**Type of Cancer**
1) Lump in the breast /recent nipple retraction/ blood stained discharge	Breast
2) Post- coital bleeding/ purulent vaginal discharge/ excessive menstrual bleeding/ inter- menstrual bleeding, dyspareunia	Uterus/ Cervix
3) Non-healing Ulcer/ bleeding in ulcer in mouth, gum, palate/ tongue, nodule on tongue	Mouth/ Gum/ Palate / Tongue
4) Difficulty in Swallowing of short duration/ Persistent hoarseness of voice or persistent cough/ Hemoptysis	Esophagus / Larynx/ Lung
5) Persistent Jaundice with lump in abdomen, loss of weight & appetite, itching	Liver/ Gall Bladder
6) Painless blood in the stool/ unexplained weight loss/ Severe Anemia/ Sudden change in bowel habit	Colon Rectum
7) Un explained bleeding from any natural orifice/ Un explained Fever more than three months	Blood/ Lymph Nod
8) Painless Excessive blood in urine/ Difficulty in Urination/ Frequent nocturnal urination in male of more than 50 years age.	Kidney/ Urinary Bladder / Prostate
9) Sudden change in size/ color of wart/mole or bleeding from wart/ mole	Skin

Only for those who have cancer or have been treated of cancer or have died of cancer

14. If Yes from where? (Keep Photocopy)	1) Medical College			2) Any Other
15. Which Site of Cancer	1) Breast	2) Uterus/ Cervix	3) Mouth/ Gum/ Palate / Tongue	4) Esophagus/ Larynx/ Lung
	5) Liver/ Gall Bladder	6) Colon Rectum	7) Blood/ Lymph Nod	8) Kidney/ Urinary Bladder/ Prostate
	9) Skin	10) Testis	11) Brain	12) Any Other
16. Diagnosis of cancer	1) Within One Year	2) Within One to Three Years	3) Within Three to Five Years	4) Above Five Years
17. Place of Treatment	1) Government Hospital	2) Private Hospital	3) Any Other	4) None
18. Is cancer patient	1) Alive ?		2) Dead ?	
19. Any Financial Aid received?	1) Yes	2) No	**19 (a). If yes then from?**	1) Government / 2) Any Other

20. Out of the following is any point applicable ? (Please Tick)

1)	Did you Breastfeed for more than six months? (if applicable)
2)	Do you use Smoke producing tobacco? (Cigarette, Biri, Huka/Chilm etc)
3)	Do you use Smokeless tobacco? (Zarda/ Gutka/ Pan Masala etc)?
4)	Do you consume Alcohol ?
5)	Has any member of your Family ever suffered from Cancer ?
6)	Do you use Oral Contraceptive Pills (OCP) ? (if applicable)

21. Marital Status	1) Married	2) Un married	3) Widowed	4) Divorced/ Separated
22. Education Level	1) Illiterate		2) Educated	
23. Occupation	1) Agriculture	2) Agricultural Labor	3) Industrial Labor	4) Other Labor
	5) Service	6) Shopkeeper /Businessman	7) Any Other	
24. Family Income (Monthly)	1) Less than 1000	2) 1000-2000	3) 2001-3000	
	4) 3001-5000	5) 5001-10000	6) 10000 or more	
25. Source of Drinking Water	1) Tap Water	2) Hand Pump	3) Canal	4) Pond/Pool
	5) Tube well	6) Well	7) RO	8) Any Other
26. Fertilizer Handled	1) Diammonia	2) Urea	3) NPK	
	4) Potash	5) S. Phosphate	6) None	

Signature

Appendix 3

Total Cancer Data Reported and Gaps

District	Cancer Deaths	Confirmed Cases	Suspected Cases	Total	Aggregate figures with SHSRC	GAP
XXXX	1389	1074	4668	7131	13108	-5977
XXXX	531	583	885	1999	2459	-460
XXXX	660	643	1532	2835	7206	-4371
XXXX	878	1031	2926	4835	4847	-12
XXXX	171	210	293	674	2904	-2230
XXXX	1530	1436	4209	7175	11868	-4693
XXXX	1196	1179	3709	6084	10324	-4240
XXXX	1137	814	1637	3588	5768	-2180
XXXX	1258	892	2946	5096	13205	-8109
XXXX	1269	708	2755	4732	4855	-123
XXXX	1819	1318	2959	6096	12925	-6829
XXXX	778	744	2144	3666	4911	-1245
XXXX	816	578	2414	3808	7881	-4073
XXXX	581	776	742	2099	3436	-1337
XXXX	655	596	2332	3583	6992	-3409
XXXX	125	63	237	425	2283	-1858
XXXX	253	381	1254	1888	9947	-8059
XXXX	305	318	654	1277	3356	-2079
XXXX	1564	1257	5813	8634	11511	-2877
XXXX	593	480	2109	3182	6706	-3524

Appendix 4

Gender Wise Data

	Deaths		Confirmed Cases		Suspected Cases	
District	**A**	**B**	**A**	**B**	**A**	**B**
XXXX	282	283	411	553	389	742
XXXX	253	227	447	528	441	888
XXXX	358	520	764	1145	929	1997
XXXX	41	27	66	74	24	49
XXXX	482	501	877	1071	889	1553
XXXX	102	101	232	293	181	354
XXXX	191	134	278	252	112	255
XXXX	240	296	361	433	398	920
XXXX	481	641	715	987	732	1582
XXXX	333	456	460	727	229	546
XXXX	175	226	312	440	317	620
XXXX	187	214	298	382	441	781
XXXX	237	223	354	423	397	714
XXXX	9	8	13	13	8	12
XXXX	60	51	122	135	126	204
XXXX	64	76	124	164	66	121
XXXX	220	223	389	470	478	971
XXXX	90	85	149	197	98	191
XXXX	144	129	266	353	70	117
XXXX	99	180	170	291	220	458

Appendix 5

Age Group Wise Data

	Deaths				Confirmed Cases				Suspected Cases			
District	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
XXXX	30	87	192	256	58	171	334	401	287	364	318	162
XXXX	35	57	174	214	68	141	347	419	353	431	363	182
XXXX	59	116	278	425	137	307	626	839	667	977	700	582
XXXX	0	8	19	41	4	26	48	62	23	21	16	13
XXXX	91	146	329	417	200	330	678	740	588	705	657	492
XXXX	16	34	52	101	44	86	158	237	135	168	130	102
XXXX	13	39	108	165	32	76	167	255	94	99	95	79
XXXX	49	87	183	217	75	131	268	320	321	459	345	193
XXXX	80	151	376	515	128	274	573	727	569	700	653	392
XXXX	41	94	289	365	81	167	435	504	152	294	216	113
XXXX	31	76	130	164	66	131	247	308	205	284	263	185
XXXX	21	58	131	191	51	112	219	298	292	393	284	253
XXXX	22	67	150	221	45	126	261	345	269	370	272	200
XXXX	1	3	9	4	2	7	11	6	3	7	6	4
XXXX	6	15	32	58	14	50	74	119	86	111	80	53
XXXX	11	15	39	75	31	38	92	127	58	49	46	34
XXXX	15	56	151	221	45	126	313	375	339	452	384	274
XXXX	15	19	70	71	19	47	137	143	70	95	79	45
XXXX	14	19	84	156	27	94	192	306	55	71	32	29
XXXX	14	42	113	110	27	65	181	188	179	222	152	125

Appendix 6

Organ Wise Data

Deaths

A	B	C	D	E	F	G	H	I	J	K	L
69	47	44	101	107	15	46	41	7	3	35	50
69	37	27	108	68	19	42	29	2	4	32	43
149	101	58	140	130	25	61	55	7	9	49	94
6	5	14	7	13	2	10	3	0	2	2	4
140	108	98	106	134	33	72	53	14	8	54	163
31	20	12	31	26	7	19	11	4	2	6	34
41	27	24	66	57	9	21	31	3	4	14	28
88	58	45	92	73	23	35	31	8	6	32	45
213	123	76	170	157	39	83	90	8	10	53	100
152	98	64	112	89	28	52	56	8	5	37	88
53	49	34	63	63	17	23	29	4	7	24	35
64	49	27	59	57	15	25	35	5	1	28	36
51	36	24	88	76	20	48	26	3	11	23	54
1	5	2	5	0	0	0	1	0	0	1	2
14	5	9	29	9	6	7	12	1	0	7	12
18	12	8	21	25	3	19	12	0	1	8	13
64	43	33	86	65	14	30	35	5	6	17	45
26	18	7	30	32	6	11	17	2	3	9	14
36	24	18	39	32	9	30	25	1	4	19	36
55	42	11	37	29	6	19	21	4	2	11	42

Confirmed Cases

A	B	C	D	E	F	G	H	I	J	K	L
180	106	78	147	144	24	63	64	16	5	45	92
195	125	55	170	97	32	78	59	6	13	50	95
347	265	129	265	231	58	125	125	21	18	93	232
24	21	27	17	14	3	12	5	0	2	6	9
328	248	185	221	209	63	117	106	30	29	117	295
101	57	31	55	48	16	32	30	11	4	24	116
101	43	35	81	68	19	36	48	6	7	39	47
138	79	66	126	109	34	55	42	10	11	45	79
365	219	113	238	212	58	112	126	11	15	72	161
249	150	93	170	130	37	90	72	9	7	52	128
125	99	60	106	117	28	43	44	9	10	46	65
123	87	45	101	88	25	33	48	7	4	49	70
136	93	39	122	97	35	66	44	6	18	34	87
5	6	2	7	0	0	0	1	0	0	2	3
56	23	16	50	15	8	13	19	4	1	20	32
54	38	24	36	30	7	29	20	1	4	15	30
149	106	51	145	112	26	55	60	11	10	39	95
76	37	15	46	44	10	18	41	6	8	16	29
141	59	43	73	47	16	46	54	7	12	38	83
83	71	20	61	48	14	31	35	9	3	20	66

Appendix 7

Urban Rural Data

District	A	B	A	B	A	B
XXXX	575	814	458	616	1255	3413
XXXX	247	284	204	379	439	446
XXXX	443	217	414	229	1188	344
XXXX	395	483	322	709	515	2411
XXXX	111	60	171	39	137	156
XXXX	532	998	404	1032	662	3547
XXXX	339	857	360	819	894	2815
XXXX	258	879	163	651	384	1253
XXXX	262	996	348	544	255	2691
XXXX	506	763	309	399	771	1984
XXXX	602	1217	604	714	598	2361
XXXX	112	666	124	620	261	1883
XXXX	179	637	100	478	305	2109
XXXX	344	237	460	316	208	534
XXXX	343	312	320	276	1634	698
XXXX	76	49	34	29	135	102
XXXX	98	155	135	246	435	819
XXXX	150	155	115	203	153	501
XXXX	493	1071	419	838	2056	3757
XXXX	77	516	72	408	113	1996