International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Impact of Socio Economic Factors on Cancer in Kurnool: An Analysis of Incidence, Access and Patient Outcomes

Dr. M. Jahanara[1], Shaik Bushra[2], Shaik Tahera Begum[3], Shaik Kausar Jaha[4], Z. Louis Akanksha[5]

[1,2,3,4,5]Department of Zoology, Dr. Abdul Haq Urdu University, Kurnool. Andhra Pradesh. Kurnool.

Abstract:

Background: Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. They happen when normal cells become cancerous cells that multiply and spread. Cancer is the second most common cause of death in the world wide. Cancer is a genetic disorder. But that doesn't necessarily mean it's inherited. It happens when genes that manage cell activity mutate (change). They create abnormal cells that divide and multiply, eventually disrupting how your body works.

Methods: A population survey was conducted between March 2025 to June 2025 in rural and urban area of Kurnool. Cancer patients, as well as their caregivers, received an invitation to take part in the research, so their problems and needs could be assessed.

Result : In this study 178 subjects 86 males (48%) and 92 females (52%) with cancer, selected randomly. In kurnool cancer prevalence was seen significantly higher number in urban area, 96 (54%) cases observed. In rural area the number of cases were 82 (46%). We noted that cancer affected above 50 year old male 44 (51%), below 50 year old male were 42(49%), in case of female cancer affected above 50 year old were 48 (52%) where as belove 50 affected female patients were 44(48%). During illness and treatment, the subjects most often felt fatigued.

Discussion: The data indicates that the likelihood of a patient's poor health and disability can be increased by cancer at least twice . Fatigue is responsible for a major disruption in patients' everyday lives, causing physical and mental disorders. This is also confirmed by our own research, during illness and treatment as many as 95% of patients felt weakness, and 26% of patients considered fatigue as the most difficult aspect of the disease. People in lower-income groups often have higher exposure to risk factors for cancer such as tobacco use, alcohol consumption, poor diet, and limited access to healthcare.

Conclusion: Patients diagnosed with cancer have a high level of unmet needs, especially in terms of psychological support and medical information. The socio-economic factors influencing cancer in Kurnool are multifaceted, affecting cancer incidence, diagnosis, treatment, and outcomes. These factors are interwoven with issues such as low awareness, limited access to healthcare, financial constraints, and cultural barriers. Addressing these challenges requires comprehensive strategies, including improved healthcare infrastructure, better financial protection, enhanced cancer awareness programs, and community engagement. The goal should be to ensure equitable access to timely, effective, and affordable cancer care for all socio-economic groups in Kurnool.

Keywords: Cancer types, Socio-Economic factors, Healthcare access, Cancer patients, Cancer outcomes.

Introduction:

Cancer is a group of diseases characterized by uncontrolled cell growth and division, where abnormal cells spread and invade other body parts. These abnormal cells, often referred to as malignant tumours, can grow and spread throughout the body, eventually causing significant damage to organs and tissues.

PREVALENCE OF CANCER IN INDIA: In 2022, the projected number of new cancer cases in India was 1,461,427, with a crude incidence rate of 100.4 per 100,000 individuals. Approximately one in nine people in India is expected to face a cancer diagnosis during their lifetime. Notably, lung cancer ranked highest among males, while breast cancer held the top spot for females. Within childhood cancers (0-14 years), lymphoid leukaemia emerged as the predominant site, accounting for 29.2% in boys and 24.2% in girls. Looking ahead, an estimated 12.8% increase in cancer incidence by 2025 is expected as compared to 2020. Cancer is the second most common cause of death in the world wide. But fewer people are dying of cancer now than 20 years ago. Early detection and innovative treatments are curing cancer and helping people with cancer live longer.(1)

Types of cancer

There are over 100 types of cancer. In that there are three broad cancer classifications:

Solid cancers: This is the most common type of cancer, making up about 80% to 90% of all cases. This includes carcinoma that forms in epithelial tissue (like your skin, breast, colon and lungs) and sarcoma that forms in bone and connective tissues.

Blood cancers: These are cancers that start in your blood cells or lymphatic system.

Examples include leukemia, lymphoma and multiple myeloma.12 Mixed Cancers: that involve two classifications orsub types. Examples include carcinosarcoma and adenosquamous carcinoma.

About 1 in 4 people will develop cancer at some point during their lifetime.

The most common cancers in the India are:

1. Breast cancer,
2. Lung cancer,
3. Prostate cancer,
4. Colorectal cancer
1. 5 ,Blood cancers.
5. Thyroid cancer,
6. Pancreatic cancer,
7. Testicular cancer,
8. Renal cancer
9. Skin cancer,
10. Bile duct Cancer, and
2. 12 Colon cancer etc.

Anyone can develop cancer, but cases vary based on race and sex. Affects people over 60 more than any other age group.

Symptoms and Causes : Symptoms of cancer vary from person to person. They depend on what type of cancer you have and how advanced it is. Fatigue, Fever that occurs mostly at night. . Loss of appetite, Night sweats. Persistent pain. Skin changes, particularly moles that change shape and size or new moles.

Unexplained weight loss. In some cases, cancer may cause additional organ-specific symptoms. These may include:

- Blood in your pee or in your stool.
- Changes in the shape, colour or size of a skin mole.
- Coughing up blood, New lumps or bumps.
- these symptoms doesn't necessarily mean you have cancer.

Cancer is a complicated disease. Different types cause different symptoms. It's also possible to have cancer for years without knowing it. Other times, it can cause obvious symptoms that get worse very quickly.1

Causes of cancer

Cancer is a genetic disorder. But that doesn't necessarily mean it's inherited. It happens when genes that manage cell activity mutate (change). They create abnormal cells that divide and multiply, eventually disrupting how your body works. These cells create cancer clusters, or tumours. Cancerous cells may break away from tumors and travel to other areas of your body through your lymphatic system or bloodstream Called as metastasis.

For example, a tumour in your breast may spread to your lungs, making it hard for you to breathe. In some types of blood cancer, your bone marrow makes abnormal blood cells that multiply uncontrollably. Eventually, the abnormal cells crowd out normal blood cells. According to medical researchers, inherited genetic mutations (changes you can't control) cause about 5% to 10% of all cancers. More often, cancer occurs as an acquired genetic mutation (change). That means it happens over the course of your life. Medical researchers have identified several risk factors that increase your chance of developing cancer.(2,3)

Risk factors

There isn't one single cause for cancer. Cancer risk factors can be broadly categorized into **lifestyle**, **environmental**, and **genetic factors**. These factors, when present, can increase the likelihood of developing cancer.

Lifestyle Factors:

Tobacco use: Smoking is a major risk factor for various cancers, including lung, throat, and many others.

Alcohol consumption: Excessive alcohol intake is linked to an increased risk of certain cancers, such as liver and breast cancer.

Unhealthy diet: Diets high in processed foods and low in fruits, vegetables, and fiber can increase cancer risk.

Physical inactivity: Lack of regular physical activity is associated with a higher risk of several cancers, including colon and breast cancer.

Obesity: Being overweight or obese increases the risk of various cancers, including colon, breast, and endometrial cancer.

Sunlight exposure: Excessive exposure to ultraviolet (UV) radiation from the sun is a significant risk factor for skin cancer.

Sexual activity: Unsafe sexual practices, such as not using condoms, can increase the risk of certain sexually transmitted infections (STIs) that are linked to some cancers, like cervical cancer.

Environmental Factors:
Exposure to carcinogens: Exposure to certain chemicals, pollutants, or other environmental hazards can increase cancer risk.
Radiation: Exposure to ionizing radiation, such as X-rays, can damage DNA and increase cancer risk.
Infections: Certain infections, like Hepatitis B and C viruses, and Human Papillomavirus (HPV), are linked to an increased risk of specific cancers.

Genetic Factors:
Family history: A family history of cancer can increase an individual's risk, particularly for certain cancers like breast and ovarian cancer.
Genetic mutations: Inherited or acquired genetic mutations can make individuals more susceptible to cancer.1
Other Factors: Age: The risk of cancer generally increases with age.
Hormones: Hormonal imbalances can increase the risk of some cancers, such as s breast and uterine cancer.
Chronic inflammation: Chronic inflammation can damage cells and increase the risk of cancer.
Immunosuppression: A weakened immune system can increase the risk of certain cancers, particularly those associated with infections.
It's important to remember that having one or more risk factors does not guarantee that someone will develop cancer. However, understanding these risk factors can help individuals make informed choices to reduce their risk and improve their overall health.
Malnutrition. High-fat or high-sugar foods can increase your risk for many types of cancer. You're also more vulnerable to disease if you don't get enough physical activity.
Hormone therapy. Women taking hormone replacement therapy may have an increased risk or breast cancer and uterine cancer.
Diagnosis and tests : Cancer detection and diagnosis involves a variety of tests and procedures, including imaging, laboratory tests, and biopsies. Imaging tests like CT scans, MRIs, and ultrasounds help visualize tumors, while blood tests can check for markers or abnormal cell counts. A biopsy, where a tissue sample is examined under a microscope, is often needed to confirm a cancer diagnosis and determine its type.

1. Initial Suspicion and History:
Healthcare providers begin by taking a detailed medical history, including family history of cancer. They conduct a physical examination to assess for any visible signs or symptoms.
2. Diagnostic Tests:
Imaging Tests:
These help visualize internal structures and detect tumors.
CT scans: Use x-rays and computers to create detailed images of organs.
MRIs: Use magnetic fields and radio waves to create detailed images.
Ultrasounds: Use sound waves to create images of internal organs.
PET scans: Detect metabolic activity in the body, highlighting areas of increased activity like tumors.
Blood Tests: These can detect certain cancer markers or abnormalities in cell counts.16

Complete blood count (CBC): Measures the number and types of blood cells.
Tumor marker tests: Detect specific substances released by tumors.
Biopsy:
This is often the definitive test for diagnosing cancer.
A tissue sample is removed from the suspicious area and examined under a microscope.
Other Tests:
Depending on the suspected cancer type, other tests like endoscopy, colonoscopy, or pap smears may be used.(4,5)
3. Interpretation and Diagnosis:
Results from imaging tests, blood tests, and biopsies are reviewed by healthcare professionals.
Pathologists examine the biopsy tissue to determine if cancer cells are present and, if so, the type and grade of cancer.
Based on the results, a diagnosis is made, and the cancer is staged to determine its spread.
4. Staging:
Staging helps determine the extent of the cancer and guide treatment options.
Common staging systems use Roman numerals (I-IV) to indicate the level of cancer spread.
5. Early Detection and Screening:
Screening tests like mammograms for breast cancer, colonoscopies for colon cancer, and PAP smears for cervical cancer can help detect cancer early when it may be more treatable.
Most cancers have four stages. The specific stage is determined by a few different factors, including the tumor's size and location.
Stages I-III (1-3) (early-stage or locally advanced) usually describe cancer that has grown directly into surrounding tissue or has spread to nearby lymph nodes.
Stage IV (4) (or metastatic cancer) means that cancer cells have spread to distant areas of your body through your bloodstream or lymphatic system.

Management and Treatment:
Cancer treatment and management involve a variety of approaches, including surgery, chemotherapy, radiation therapy, immunotherapy, and targeted therapies, often used in combination. The specific treatment plan depends on the type and stage of cancer, as well as the patient's overall health. After treatment, ongoing care and support are essential, including palliative care and rehabilitation.

Common Cancer Treatment Approaches:
Surgery: Involves surgically removing cancerous tumours and surrounding tissues.
Chemotherapy: Uses drugs to kill cancer cells, often administered intravenously or orally**Radiation Therapy**: Uses high-energy radiation to kill cancer cells and shrink tumors.
Immunotherapy: Stimulates the body's immune system to fight cancer cells.
Targeted Therapy: Uses drugs that target specific genetic changes in cancer cells.
Hormone Therapy: Uses hormones or hormone blockers to slow or stop the growth of cancers that are sensitive to hormones.
Bone Marrow Transplant: Replaces damaged blood-forming stem cells with healthy ones.

Adjuvant and Palliative Care:

Adjuvant Therapy:

Treatment given after primary treatment (like surgery) to kill any remaining cancer cells and reduce the risk of recurrence.(6)

Palliative Care:

Focuses on relieving symptoms and improving quality of life for patients with advanced cancer, when cure is not possible.

Clinical Trials:

Patients may participate in clinical trials to access new and experimental treatments.

Supportive Care:

Includes managing side effects of treatment, such as nausea, pain, and fatigue.

Rehabilitation:

After successful treatment, specific rehabilitation may be needed to regain lost function.

Prevention

Cancer prevention involves taking actions to reduce the risk of developing cancer, including lifestyle changes, avoiding known risk factors, and getting vaccinated. Key strategies include maintaining a healthy weight, being physically active, eating a balanced diet, avoiding tobacco and alcohol, and protecting oneself from the sun. Regular medical checkups and screenings can also help detect cancer early, when it is most treatable, or even prevent it in some cases.18

1. Lifestyle Choices:

Maintain a healthy weight:

Obesity is linked to increased risk of various cancers, so maintaining a healthy weight through diet and exercise is crucial.

Be physically active:

Regular physical activity, like at least 150 minutes of moderate-intensity exercise or 75 minutes of vigorous-intensity exercise per week, can reduce the risk of certain cancers.

Eat a balanced diet:

Focus on fruits, vegetables, whole grains, and lean protein sources, while limiting processed foods, sugary drinks, and red and processed meats.

Avoid tobacco and alcohol:

Smoking is a major risk factor for many types of cancer, and alcohol consumption is linked to an increased risk of several cancers.

Protect yourself from the sun:

Sun exposure can increase the risk of skin cancer, so it's important to wear sunscreen, protective clothing, and seek shade during peak sun hours.

2. Risk Factor Avoidance:

Avoid exposure to known carcinogens: This includes avoiding exposure to certain chemicals and pollutants in the workplace and environment.

Reduce exposure to radiation: Limit unnecessary exposure to medical radiation and avoid tanning beds.

3. Vaccination:

Get vaccinated against HPV: Vaccination against the human papillomavirus (HPV) can prevent cervical, anal, and some forms of head and neck cancer.

4. Medical Checkups and Screenings:

Regular medical checkups:

Talk to your doctor about recommended screenings for your age and risk factors.

Cancer screenings:

Screening tests, like colonoscopies for colon cancer and Pap tests for cervical cancer, can help detect cancer early or even prevent it.

5. Other Preventive Measures:

Breastfeeding: If possible, breastfeeding can reduce a woman's risk of breast cancer.

Avoid hormone therapy for menopause: Long-term hormone therapy for menopause can increase the risk of certain cancers.

Consider medications to reduce risk: For individuals at high risk of certain cancers, medications like tamoxifen and raloxifene may be recommended.

You can't always prevent cancer, especially when unavoidable risk factors cause it. But there are things you can do to lower your risk:

If you smoke or use tobacco, try to stop.

Follow a nutrition plan that's healthy for you, Include physical activity in your daily routine.

Avoid environmental toxins like asbestos and pesticides. Protect yourself against sun damage, Have regular cancer screenings on Your overall health.The type of cancer you have, The stage of your cancer.

In Kurnool, socioeconomic factors significantly impact cancer incidence, access to care, and patient outcomes. Lower socioeconomic status (SES) is associated with higher cancer incidence rates, delayed diagnosis, and poorer survival outcomes. Access to healthcare, including screening and treatment, is also limited for those with lower SES, further exacerbating disparities.(7)

1. Socioeconomic Factors and Cancer Incidence:

Lower SES and Increased Risk:

Research consistently shows that individuals with lower SES, including lower education levels and income, face a higher risk of developing various cancers. This is potentially due to factors like increased exposure to environmental hazards, unhealthy lifestyle choices (e.g., smoking), and limited access to preventive care.

Specific Cancers:20

The impact of SES on specific cancers can vary. For example, studies have shown that lower educational attainment is linked to higher rates of lung cancer, while material disadvantage is correlated with increased risk of cervical cancer.

Delayed Diagnosis:

Individuals with lower SES may experience delays in diagnosis due to barriers to healthcare access, including financial constraints, transportation difficulties, and lack of awareness about screening programs.

AIM :

To analyze the impact of socio-economic factors on cancer incidence, healthcare access, and patient outcomes in Kurnool district, with the goal of identifying disparities and proposing data-driven recommendations for equitable cancer care.

OBJECTIVES

To examine the correlation between socio-economic status and cancer incidence in Kurnool.

Analyze cancer registry data stratified by income, education, occupation, and geographic location (urban/rural).

To assess disparities in access to cancer diagnosis, treatment, and follow-up care based on socio-economic factors.

Evaluate access to public and private healthcare facilities, availability of diagnostic tools, and financial support schemes.

To evaluate the influence of socio-economic conditions on cancer outcomes (e.g., survival rates, treatment completion, recurrence).

Identify patterns in disease progression and mortality across different socio economic strata.

To explore the awareness, health-seeking behavior, and delays in treatment among various socio-economic groups.

Conduct surveys/interviews if applicable, or analyze existing data on healthcare Behaviour and delays.

To provide recommendations for targeted policy interventions aimed at reducing socio-economic disparities in cancer care.

Suggest strategies for improving outreach, affordability, and early detection in underserved communities(8)

MATERIALS AND METHODS:

A population survey was conducted between March 2025 to June 2025 in rural and urban area of Kurnool. The project was completed within a period of three months. Cancer patients, as well as their family members, caregivers, received an invitation to take part in the research, so their problems and needs could be assessed.

Data Collection Tools: Structured questionnaires and data extraction forms for quantitative analysis. Interview guides for qualitative interviews. Data is given as number and percentage.

Data Collection Tools:

A. Quantitative Data Collection:

Patient Demographic Forms: Structured forms to capture demographic data, including age, gender, income, education level, occupation, and geographic location.

Medical Record Review: Collection of clinical data such as cancer type, stage at diagnosis, type of treatment, treatment adherence, and follow-up care.

Socio-Economic Indicators: Data on income, housing, access to healthcare facilities, and health insurance status will be collected.

Survival and Outcome Data: Collect patient outcomes (e.g., survival rates, recurrence) from hospital records, cancer registries, and patient follow-up information.

B. Qualitative Data Collection:

Semi-Structured Interviews: Open-ended interviews will be conducted with patients, caregivers, and healthcare providers. The interviews will explore themes such as barriers to early diagnosis, treatment access, socio-economic challenges, and knowledge of cancer care.

Focus Group Discussions (FGDs): FGDs will be conducted with community health workers and local oncologists to understand their perspectives on the socio-economic challenges faced by cancer patients.

Data Analysis Methods:

A. Quantitative Data Analysis:

Descriptive Statistics: Measures such as mean medians and percentages will be used to summarize demographic and clinical characteristics.

B. Qualitative Data Analysis:178

Thematic Analysis: Data from interviews and focus groups will be transcribed and coded to identify recurring themes and patterns related to socio-economic barriers, healthcare access, and patient outcomes.

Ethical Considerations: Informed Consent: All participants, including cancer patients, caregivers, and healthcare professionals, will be informed about the study's purpose, procedures, and their rights, including the right to withdraw at any time.

Confidentiality: All data will be anonymized, and patient records.

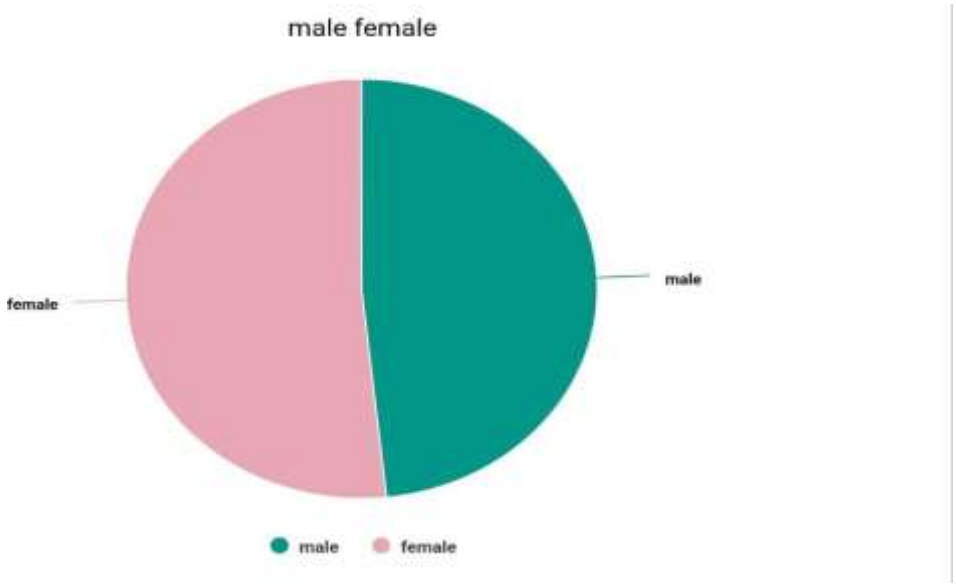
Observations and Results:

GENDER PERCENTAGE

Table :1

SL.NO	GENDER	SUBJECT (N=178)	PERCENTAGE
1	Male	86	48%
2	Female	92	52%

Fig:1

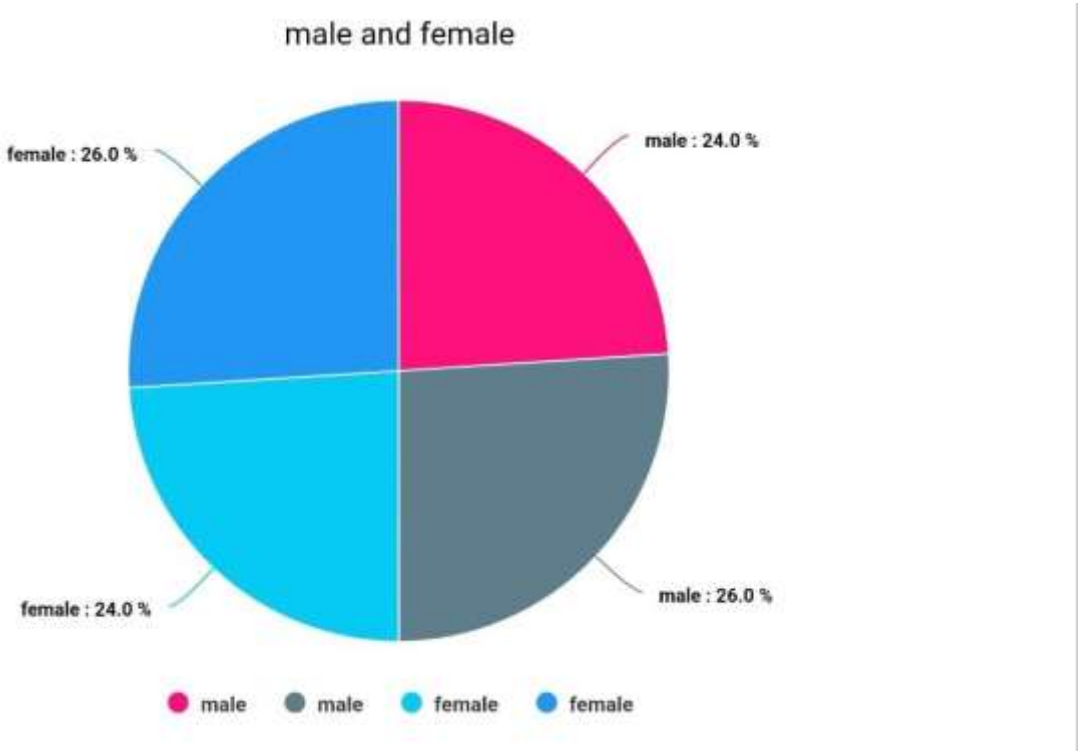


GENDER > 50 AND < 50

Table: 2

Sl.no	Gender	Above 50	Below 50	Percentages	
				Above50	Below50
1	Male	22	24	26%	24%
2	Female	21	22	26%	24%

Fig:2

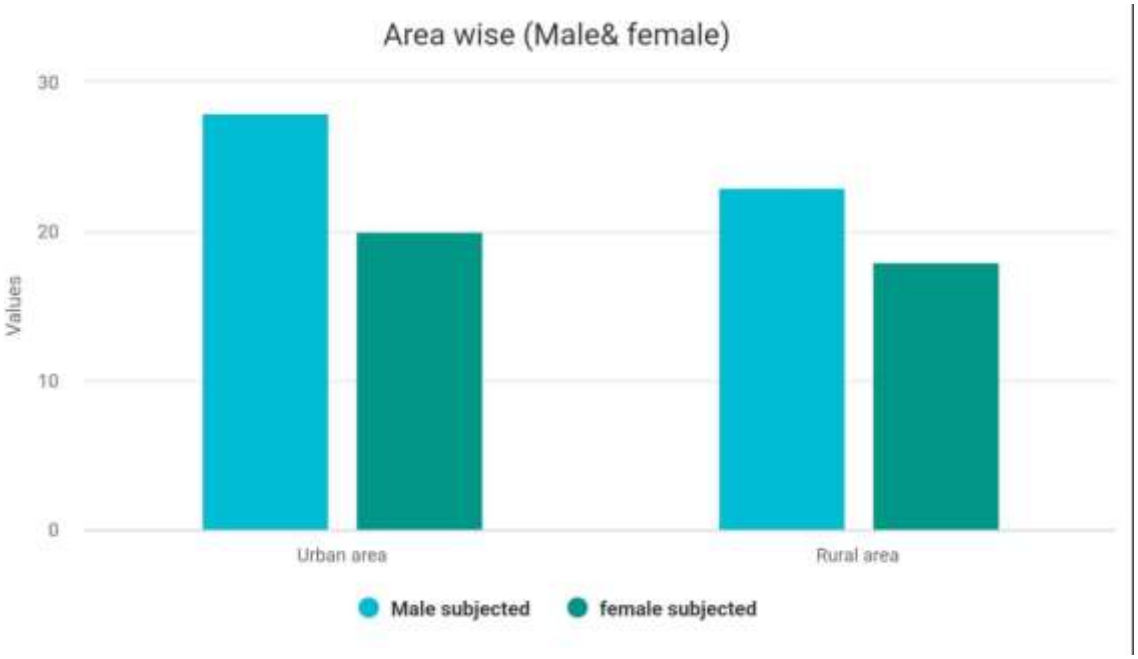


Area wise

Table :3

Percentages						
Sl.no	Rural		urban		rural	Urban
	Male	female	male	female		
1	23	18	28	20	46%	54%

Fig :3



Types of cancer

Table :4

Sl. NO	Type of Cancer	Men Subjects: 86	Percentage	Women Subjects:92	Percentage
01	Blood	16	19%	12	13%
02	Breast	Nil	Nil	30	33%
03	Cervical	---	---	08	01%
04	Colorectal	26	30%	16	17%
05	Lung	12	14%	04	.04%
06	Oral	08	01%	06	.07%
07	Prostate	06	.07%	---	---
08	Thyroid	04	.05%	08	01%
09	Bone	02	.02%	02	.02%
10	Renal	08	01%	04	.04%
11	Skin	04	.05%	02	.02%

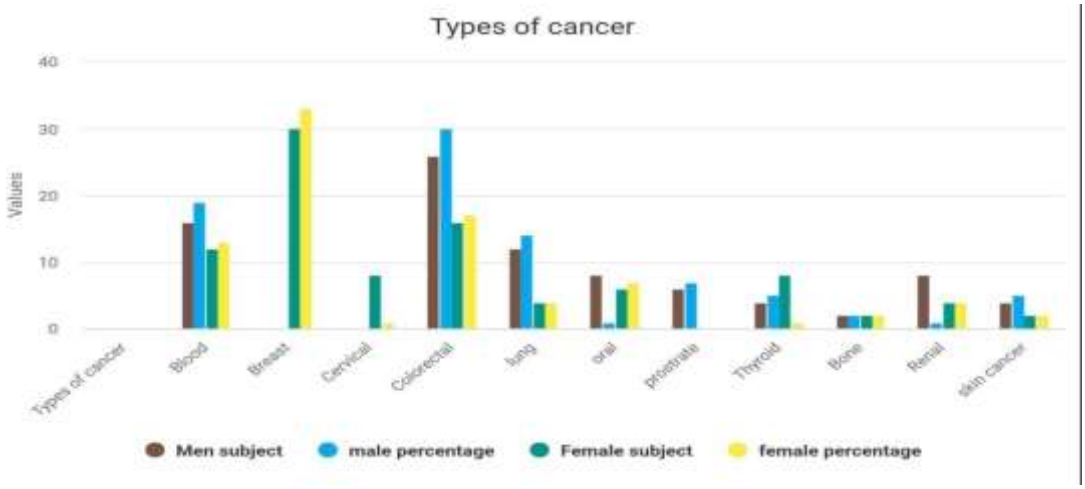


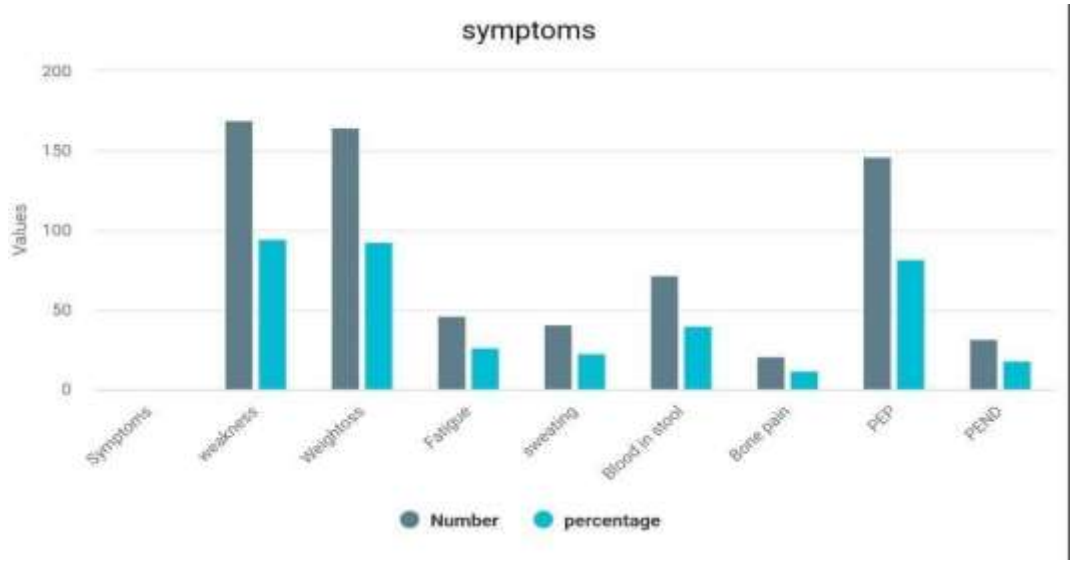
Fig:4

Symptoms

Table :5

S.NO.	Symptoms	Number:178	Percentage
01	Weakness	169	95%
02	Weight loss	165	93%
03	Fatigue	46	26%
04	Sweating	41	23%
05	Blood in stool	72	40%
06	Bone pain	21	12%
07	Preventive examinations were performed(PEP)	146	82%
08	Preventive examinations were not done(PEND)	32	18%

Fig:5

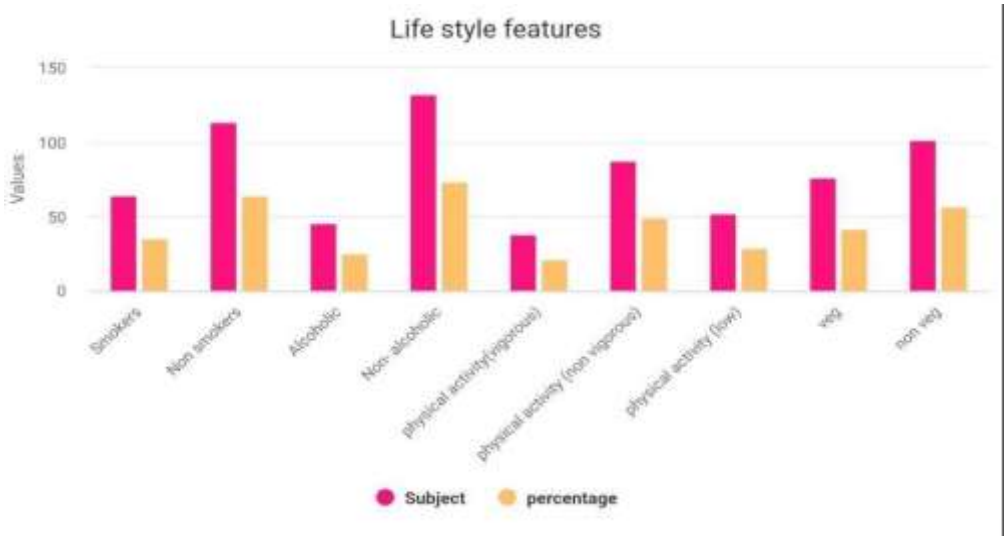


Life style features

Table :6

Addiction	Subject	percentage
Smokers	64	35
Non smokers	114	64
Alcoholic	46	25
Non- alcoholic	132	74
physical activity(vigorous)	38	21
physical activity (non vigorous)	88	49
physical activity (low)	52	29
veg	76	42
non veg	102	57

Fig:6

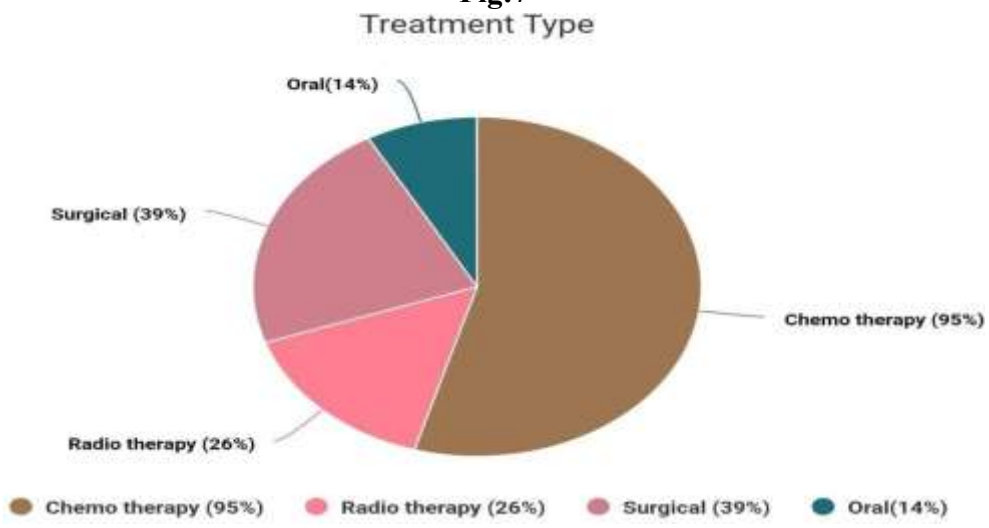


Treatment type Table:7

S.NO	Treatment	Number:178	Percentage
01	Chemotherapy	169	95%
02	Radiotherapy	47	26%
03	Surgical	69	39%

04	Oral Therapy	25	14%

Fig:7

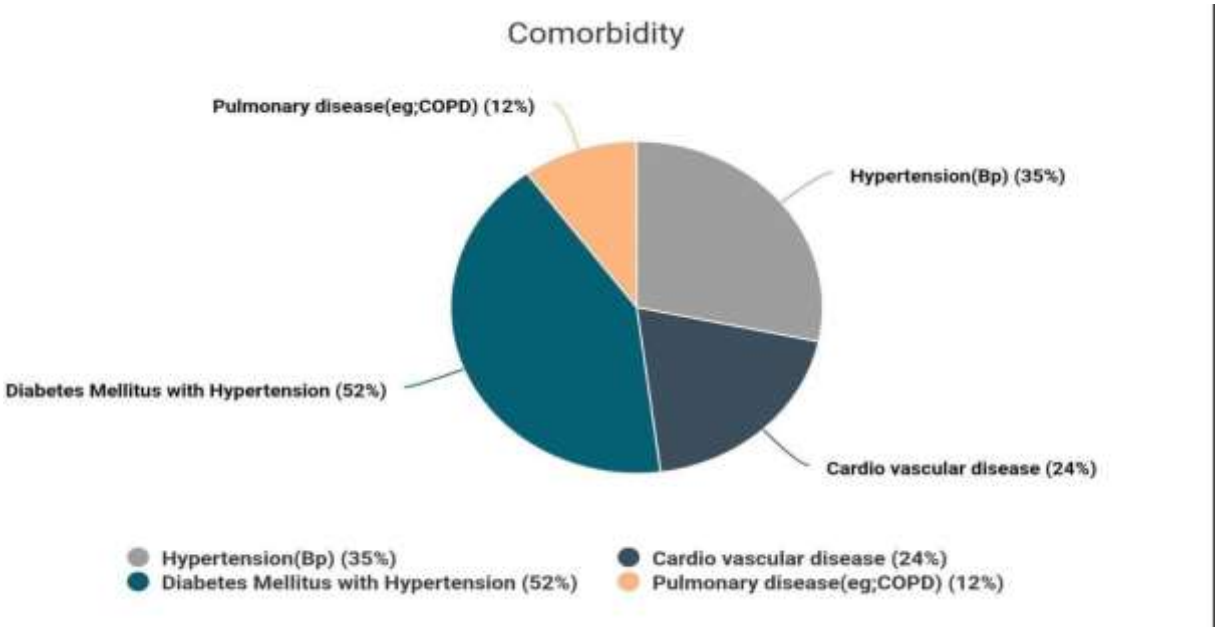


PREVALENCE OF COMORBIDITIES AMONG CANCER PATIENTS

Table:8

S.No	**Comorbidity**	Prevalence (Number)	Percentage
01	Hypertension (Blood Pressure):	62	35%
02	Cardiovascular Diseases	43	24%
03	Diabetes Mellitus with Hypertension	92	52%
04	Pulmonary Diseases (e.g., COPD, asthma)	22	12%

Fig :8

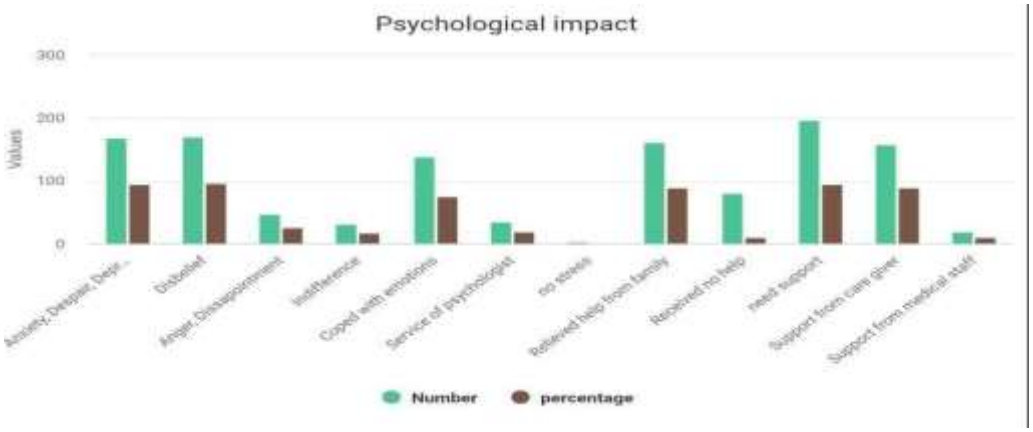


PSYCHOLOGICAL IMPACT

Table :9

S.NO.	Psychological IMPACT	Number	Percentage
01	Anxiety, despair, depression, feelings of helplessness	169	95%
02	Disbelief, failure to accept negative information	170	96%
03	Anger, disappointment	47	26%
04	Indifference	32	18%
05	Coped with emotions with family support	138	76%
06	Used the services of a psychologist	35	20%
07	No stress	04	02%
08	Received help from family and friends	161	90%
09	Received no help	18	10%
10	Need support	169	95%
11	Support from caregiver	158	89%
12	Support from medical staff	20	11%

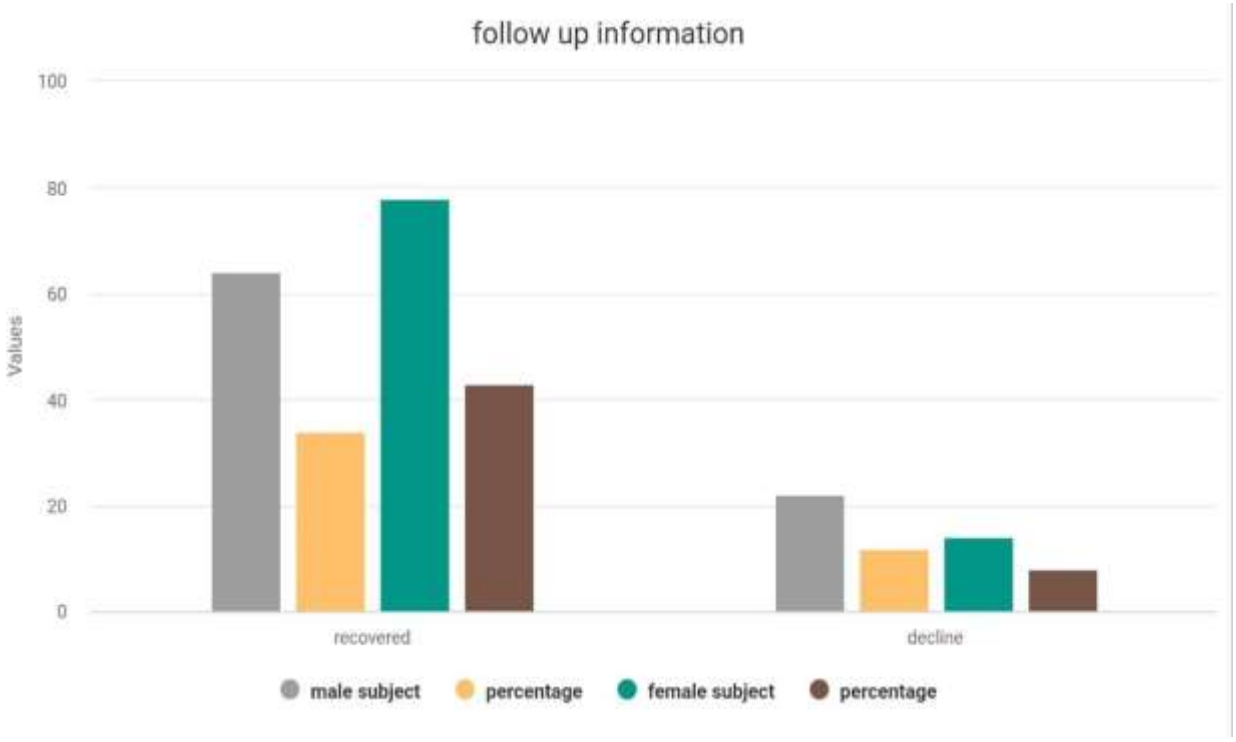
Fig:9



Follow up information Table :10

Follow up information	**Male subject**	**percentage**	**Female subject**	**percentage**
Recovered	64	34	78	43
Decline	22	12	14	8

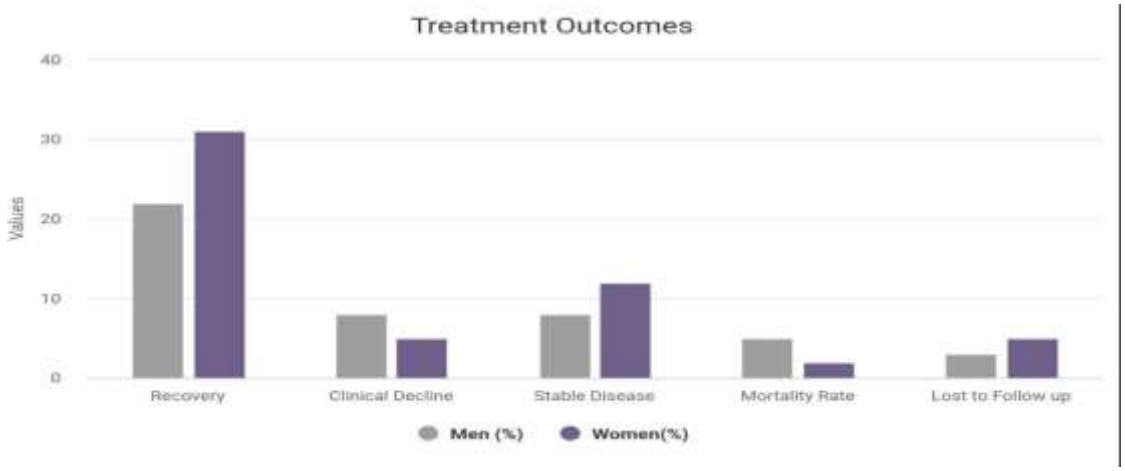
Fig:10



Treatment Outcomes Table :11

S.NO	Treatment Outcomes	Men(%)	Women(%)
01	Recovery	22%	31%
02	Clinical Decline	08%	05%
03	Stable Disease	08%	12%
04	Mortality Rate	05%	02%
05	Lost to Follow-Up	03%	05%

Fig:11



RESULT:

In this study 178 subjects 86 males (48%) and 92 females (52%) with cancer. Selected randomly were (Table:1, Fig:1). In kurnool Cancer prevalence was seen significantly higher number in urban area, 96 (54%) cases observed. In rural area the number of cases were 82 (46%) (Table:2, Fig:2).

We noted that cancer affected above 50 year old male 44 (51%), below 50 year old male were 42(49%), in case of female cancer affected above 50 year old were 48 (52%) where as below 50 affected female patients were 44(48%).(Table: 3,Fig:3).

The data on the most common cancers that the patients suffered from showed that Blood cancer in men 16(19%) and in women 12(13%).Breast cancer in women were 30(33%)and

Cervical cancer 08(01%) Colorectal cancer in men 26(30%), in women 16(17%) were the most frequently indicated occurrences of cancer.

The Lung cancer in men were 12(14%) in women 04(.04%).Oral cancer in men 08(01%) and women 06 (.06%).

In our study only 04 men (.05%) were suffering from Prostate cancer. Thyroid cancer in men were 04(.05%) and in women 08(01%). Bone cancer patients 02(.02%) in men and in women also only 02(.02%). Renal cancer in men were 08(1%) and in women were seen only 04(.04%).Skin cancer in our study men were 04(.05%) and in women were 02(.02%).(Table:4, Fig:4)

Symptoms that occurred in patients before the diagnosis were: weakness 169 (95%), weight loss 165(93%), sweating 41(23%),fatigue 46(26%) blood in the stool 72(40%), bone pain 21(12%), nausea, vomiting 143(80%), diarrhoea 152(85%). Regular preventive examinations were performed by 32 (18%) of patients, the remaining 146(82%) of patients did not undergo preventive examinations (Table:5, Fig:5)

Patients: Treatment: Most patients 169(95%) received chemotherapy. Radiotherapy was used in 47(26%) of subjects. Some of the patients respondents underwent brachytherapy or surgical treatment 69(39%). Few patients 25(14%)respondents with Oral medicine. Therapy had the least impact on the emotional state of the respondents, as 121(68%) of subjects did not feel its impact on this matter. The respondents who felt that therapy affected their emotional state most often 57(32%) indicated the occurrence of depressive symptoms, sadness, crying and anger. The effect of therapy on the physical condition was noticeable in 69(39%) of people, and most often 152(85%) was manifested by the lowered mood. Almost everyone169 (95%) felt that therapy affected their physical condition, which was mostly manifested by fatigue and weakness. The relation between the effects of therapy on mental and emotional state and respondents-age, gender and place of residence was not confirmed(Table:6,Fig:6

Comorbidity is common in patients with colon cancer breast cancer, and lung cancer . A recent. Our study found that elderly patients with colorectal, lung cancer,

Prostate cancer and blood cancer had a higher prevalence of comorbidity than an age- and sex- matched comparison cohort from the general population. The probable reason for these findings is that known risk factors for colorectal or lung cancer, such as smoking, obesity, and physical inactivity, are also common risk factors for non-cancer diseases such as Cardiovascular disease, Diabetes Mellitus, blood pressure, Pulmonary Disease, Chronic obstructive, Dementia. The prevalence of comorbidity increases with age, the number of cancer patients with comorbidity will increase concomitantly.

In our study data have shown that up to two-thirds of all cancer patients have at least one comorbidity, with around half having multiple long-term health conditions. The risk of comorbidity also increases after a cancer diagnosis as the toxicities from oncological treatment regimens can include cardiovascular disease, steroid-induced diabetes or immunotherapy- related endocrine disorders, to name a few. Late effects of

cancer treatments may be significantly more burdensome for patients already managing other chronic conditions.

Cancer patients' diagnoses are presented in Table:7 Fig:7

Among the cancer patients analysed, a significant proportion were found to have one or more comorbid conditions. The distribution of comorbidities is as follows:

- **Hypertension (Blood Pressure):** Present in **35%** of patients.
- **Cardiovascular Diseases:** Reported in **24%** of patients.
- **Diabetes Mellitus with Hypertension:** A combined comorbidity found in **52%** of patients.
- **Pulmonary Diseases (e.g., COPD, asthma):** Observed in **12%** of patients.

These findings indicate that comorbid conditions, particularly hypertension and diabetes, are prevalent among cancer patients and may influence disease progression and treatment outcomes.

Among the cancer patients assessed, the distribution across cancer grades was as follows:

- **Grade I:** 33%
- **Grade II:** 45%
- **Grade III:** 14%
- **Grade IV:** 8%

Patients: Psychological IMPACT:

At the time of diagnosis, the subjects most often felt anxiety, despair, depression, feelings of helplessness169 (95%)disbelief, failure to accept negative information 170(96%), anger, disappointment 47 (26%) or indifference 32(18%). Most often138 (76%) respondents coped with emotions with family support. 35(20%) of people used the services of a psychologist, while few 04 (02%) did not cope with emotion and stress. Most respondents 161(90%) received help from their family or friends. 18(10%) of respondents did not receive help. The vast majority 169(95%)expressed a need of support, 158(89%) would like to receive it from their caregiver,20(11%)would like to have support from medical staff(Table:7,Fig:7) **Patients' responses to the diagnosis of cancer by cancer stage.**

Patients were least afraid of pain and appearance changes 84%. The occurrence of anxiety before starting therapy did not have any significant relation to the respondents' age, their sex, or their residence. The majority of subjects 80% accepted their appearance resulting from the disease. 20% hid their disease, did not talk about it, avoided contact with people, felt worse than others. Few 4%,were ashamed of their appearance, they could not accept it, were isolated and withdrawn. The age of the respondents did not significantly influence their opinions about the impact of appearance changes on their life. It was found that rural residents more often accepted their appearance than urban residents .The differences shown were not statistically significant. Over half of the respondents 69% accepted their illness, while 31% could not accept the illness and come to terms with the situation, felt overcome by the disease. Attitude towards the disease did not significantly depend on the age of the subjects. Women accepted their disease significantly more often 74% than men 50%,. Positive attitude towards the illness was slightly more often presented by rural residents 71% than urban residents 65%.

Patients: Healthcare

65% of respondents did not feel properly educated by healthcare professionals about their illness. 35% felt fully educated in this respect. Internet was the main source of information about the disease 72%. while 28% chose other media. Few subjects 12% mentioned the doctor as a source of knowledge about the disease, 10% indicated a nurse. The need for information was reported by 86% of respondents and everyone (100%) would like to gain knowledge from a professional about treatment 98%, course of the

disease 78%, future prognosis 81%, recovery prospects 84%, The subject of life expectancy was discussed in 8% of patients.

Treatment Outcomes:

Outcomes among the studied cancer patients were as follows:

Recovery/Improved Condition: 31% of women and 22% men showed significant clinical improvement or complete recovery following treatment.

Clinical Decline/Disease Progression: 5% of women and 8% men exhibited deterioration in condition or progression of the disease despite treatment.

Stable Disease/No Significant Change: 12% women and 08% men were maintained a stable condition without major improvement or decline.

Mortality Rate: 2% women and 5% men succumbed to the disease during the treatment or follow-up period.

Lost to Follow-Up/Incomplete Data: 4%women and 3% men were not available for final outcome evaluation.

Discussion:

A disease that has significant physical, emotional, social and financial consequences for those affected and their families. In a significant number of cases, the diagnosis of cancer is preceded by a period of gradual, non-specific symptoms or made by routine screening. Many patients are relatively healthy prior to cancer occurrence and, therefore, are not experienced consumers of medical services. After receiving a cancer diagnosis, the patient faces many problems, including fear of death, disfigurement, pain, disability and financial hardships. Typically, the initial response is shock and denial, the duration of which is highly variable, followed by anxiety, depression and inability to function. At the same time, aside from the damage caused by cancer itself, therapy also brings side effects that often lead to significant or permanent health impairment. The data indicates that the likelihood of a patient's poor health and disability can be increased by cncer at least twice . Fatigue is responsible for a major disruption in patients' everyday lives, causing physical and mental disorders. This is also confirmed by our own research, during illness and treatment as many as 95% of patients felt weakness, and 26% of patients considered fatigue as the most difficult aspect of the disease. Research shows that fatigue is compounded by pain that is felt by 0.3–0.5 of the patients in active cancer treatment. The impact of physical suffering on functional impairment and several other psychosocial aspects of health has also been documented.

Aside from physical health problems, there are also psycho-social issues. Emotional stress related to life with cancer diagnosis and treatment, anxiety and stress associated with everyday physical problems can create new mental disorders for cancer patients, or make the already existing disorders worse; this also applies to their families or caregivers. Physical and mental impairment can also make work or performing other social roles impossible for the Patient.

Analysis of our own research showed that 81% of patients were unable to imagine the future. Another important problem affecting the mental well-being of the patient is the feeling of loneliness, which often appears in chronic illness. Our own research shows that only 9% of patients felt lonely and were mostly men. A person can feel alone with the disease even in large family. Patients are affected by lack of support, understanding, time, constant rush, lack of detailed information about the disease. Difficult relations with the caregiver and family are also a very common problem.

They are a source of stress that adversely affects the treatment process. Long-term stress,anxiety, low mood, lack of proper support can lead to the development of depression, which is the most common mental illness contributing to the global burden of disability. According to our own research, at the time of diagnosis, the respondents most often felt anxiety, despair,sadness and helplessness 40%, while during therapy 69% of the subjects felt anxiety and 21% were treated for depression. Cancer changes the lives of not only the patient but also their caregiver. It has a huge impact on the family, children, relations between partners.

Family members also have psychological needs. Mental problems of family members sometimes are just as severe as the patient's suffering.

Cancer Incidence and Socio-Economic Disparities: Income Levels and Cancer Prevalence: People in lower-income groups often have higher exposure to risk factors for cancer such as tobacco use, alcohol consumption, poor diet, and limited access to healthcare. In Kurnool, rural or economically disadvantaged populations may be more exposed to such risk factors. High cancer incidences in these areas may be driven by lifestyle-related factors, lack of awareness, or inadequate health interventions.

Education and Awareness: Low levels of education and awareness about cancer can prevent early detection. Many individuals in socio-economically disadvantaged areas might not have the knowledge to recognize symptoms or seek timely medical help. This could lead to a higher incidence of cancers diagnosed at later, more difficult-to- treat stages.

Environmental and Occupational Risks: For people in lower socio-economic brackets, there may also be an increased exposure to environmental carcinogens, especially in rural or industrial settings. For example, agricultural workers in Kurnool could be exposed to pesticides, which are linked to some types of cancers.

Access to Healthcare and Socio-Economic Barriers

Geographical Barriers: Kurnool, being a district in Andhra Pradesh, might face significant geographical barriers, especially in rural areas. Limited infrastructure and long distances to healthcare centers can reduce timely diagnosis and access to treatment. Rural residents, particularly those from lower socio-economic groups, might have limited access to cancer screening, diagnostics, and treatment centers.

Healthcare Infrastructure and Financial Constraints: People with lower socio- economic status may not afford the costs of cancer treatment. Even when treatment is available, there may be issues related to cost (such as transportation, medication, and hospital bills) that affect whether patients complete their prescribed treatment.

Health Insurance and Financial Support: Lack of health insurance coverage or government support can also deter cancer patients from seeking timely care or opting for expensive treatment options. In some rural areas, there is minimal coverage for cancer treatment under public health schemes. Limited access to specialized cancer care centers, or even basic diagnostic facilities, exacerbates this issue.

Cancer Treatment and Patient Outcomes:

Late-Stage Diagnosis: A significant issue in low-income rural areas is late-stage cancer diagnosis. Many cancers are diagnosed when they have already reached an advanced stage, making treatment less effective and survival rates lower. Lack of awareness, absence of regular check-ups, and reluctance to seek medical help due to fear, social stigma, or financial constraints contribute to this issue.

Lack of Specialized Treatment Centers: Kurnool may have a few government and private hospitals, but specialized cancer care centers might be limited. Advanced cancer treatments such as bone marrow transplants, high-dose chemotherapy, and immuno therapy are not always available locally, forcing

patients to travel to distant cities. Travel costs and the ability to take time off work for treatment make it difficult for many to continue their treatment regimens.

Palliative Care:

Palliative care is an essential part of cancer treatment, especially for those with advanced stages of the disease. However, Kurnool may have limited resources in this area. Many cancer patients suffer not only from the physical symptoms of the disease but also from emotional distress, financial hardship, and lack of social support. Rural healthcare providers might be ill-equipped to offer comprehensive palliative care, including pain management, counseling, and end-of-life support.

Government Policies and Public Health Initiatives

National Cancer Control Program (NCCP): The Indian government's National Cancer Control Program aims to improve cancer care and reduce the burden of cancer in India. However, its effectiveness can vary greatly by region. The implementation of this program in Kurnool might face challenges such as lack of trained professionals, limited resources, and underfunding in rural areas. Improving awareness, facilitating screening, and providing subsidized treatment through government schemes are some of the critical aspects of this program that could benefit Kurnool's population.

Ayushman Bharat: This national health insurance scheme provides coverage for cancer treatment, but implementation in rural regions like Kurnool may face challenges related to awareness, registration, and accessibility. Many individuals in rural areas may not be fully aware of these health schemes or may face difficulties accessing them due to bureaucratic hurdles or lack of infrastructure. Strengthening the outreach of this progra and ensuring that more people in rural areas benefit from it can significantly improve cancer care accessibility.

Cancer Awareness Campaigns: Government and non-governmental organizations (NGOs) play a critical role in educating the public about cancer prevention, risk factors, and the importance of early diagnosis. In Kurnool, where awareness levels may be low, targeted campaigns focusing on lifestyle modifications, early detection (like breast self-examinations or HPV vaccination for cervical cancer), and the availability of free or low-cost screening services could help reduce cancer mortality.

Support Groups and Patient Networks: Social support is vital for cancer patients, especially in rural areas where social isolation is more pronounced. Local support groups and patient networks can help improve the psychological well-being of patients, provide information about treatment options, and offer emotional support. Empowering local communities to build such networks can create a sense of solidarity and provide a platform for sharing experiences.

Impact of Cultural and Societal Factors

Cancer Stigma and Fear:

Cultural beliefs in rural areas often contribute to stigma surrounding cancer. People may associate cancer with certain taboos or view it as an incurable disease, which might discourage them from seeking help. Fear of the disease and its perceived "death sentence" quality can lead to denial and delay in seeking care. Community leaders, religious figures, and local healthcare providers can work together to reduce stigma and encourage people to seek timely medical attention.

Gender and Cancer: Women in rural areas may face additional challenges related to gender roles. For instance, breast and cervical cancer, which disproportionately affect women, are often diagnosed late due to a lack of awareness, fear of social stigma, and cultural taboos around discussing reproductive health.

Women's empowerment initiatives, which promote education and open dialogue about health issues, can help address these Barriers.

Conclusion:

This study provides a framework for assessing the status and trends of cancer in Kurnool. India exhibits heterogeneity in cancer. Cancer of the breast and cervix uteri were the most common cancers in women. In India, lung cancer can be attributed to tobacco use and air pollution, which are the leading risk factors. Patients diagnosed with cancer have a high level of unmet needs, especially in terms of psychological support and medical information. These needs are priority areas that should be addressed in order to improve the care of cancer patients. Research shows that dissatisfaction with medical information is linked to the development of anxiety and depression. A key challenge for the oncology team is to identify high-risk patients. It is important to distinguish experiencing and transient suffering related to cancer from excessive, disabling suffering requiring psychiatric intervention. Psycho-social research offers the possibility of early intervention and if mental disorders are not detected or treated, they jeopardize the outcomes of cancer therapies, reduce patients' quality of life and increase healthcare costs. Perhaps one of the better solutions is the widespread inclusion of mental health issues in the training of health professionals in order to meet the needs of oncology patients.

The socio-economic factors influencing cancer in Kurnool are multifaceted, affecting cancer incidence, diagnosis, treatment, and outcomes. These factors are interwoven with issues such as low awareness, limited access to healthcare, financial constraints, and cultural barriers. Addressing these challenges requires comprehensive strategies, including improved healthcare infrastructure, better financial protection, enhanced cancer awareness programs, and community engagement. The goal should be to ensure equitable access to timely, effective, and affordable cancer care for all socio- economic groups in Kurnool.

The impact of socio-economic factors on cancer incidence, access to care, and patient outcomes in Kurnool, a district in Andhra Pradesh, is a complex issue shaped by multiple interrelated elements. These include low awareness, limited healthcare infrastructure, cultural stigma, financial constraints, and lifestyle risks that disproportionately affect lower-income and rural populations.

Cancer Incidence and Risk Factors:

In economically disadvantaged areas like Kurnool, lifestyle factors such as tobacco and alcohol use, poor diet, and exposure to environmental carcinogens (e.g., pesticides in agricultural work) contribute significantly to higher cancer risk.

Additionally, low levels of education and awareness about cancer prevention and early detection further exacerbate this problem.

References:

1. Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, et al. Global Cancer Observatory: Cancer Today. Lyon: International Agency for Research on Cancer; 2020 (https://gco.iarc.fr/today, accessed February 2021).
2. Avancini A., Pala V., Trestini I., Tregnago D., Mariani L., Sieri S., Krogh V., Boresta M., Milella M., Pilotto S., et al. Exercise Levels and Preferences in Cancer Patients: A Cross-Sectional Study. Int. J. Environ. Res. Public Health. 2020;17:5351. doi: 10.3390/ijerph17155351. [DOI] [PMC free article] [PubMed] [Google Scholar]

3. 3. Adler N.E., Page A.E.K., editors. Cancer Care for the Whole Patient: Meeting Psychosocial Health Needs. National Academies Press; Washington, DC, USA: 2008. Institute of Medicine (US) Committee on Psychosocial Services to Cancer Patients/Families in a Community Setting. [PubMed] [Google Scholar]
4. 4 Carr D., Goudas L., Lawrence D., Pirl W., Lau J., DeVine D., Kupelnick B., Miller K. Management of Cancer Symptoms: Pain, Depression, and Fatigue. Agency for Healthcare Research and Quality; Rockville, MD, USA: 2002. AHRQ Publication No. 02-E032. [DOI] [PMC free article] [PubMed] [Google Scholar]
5. 5. Spiegel D., Giese-Giese J. Depression and cancer: Mechanism and disease progression. Biol. Psychiatry. 2003;54:269–282. doi: 10.1016/S0006-3223(03)00566-3. [DOI] [PubMed] [Google Scholar]
6. 6. Nandakumar A, Gupta PC, Gangadharan P, et al : Geographic pathology revisited: Development of an atlas of cancer in India. Int J Cancer 116 : 740 - 754, 2005.
7. 7.Swaminathan R, Selvakumaran R, Esmy PO, et al : Cancer pattern and survival in a rural district in South India. Cancer Epidemiol 33 : 325 - 331, 2009.
8. 8. Mollica M.A., Weaver K.E., McNeel T.S., Kent E.E. Examining urban and rural differences in perceived timeliness of care among cancer patients: a SEER-CAHPS study. Cancer. 2018;124:3257–3265. doi: 10.1002/cncr.31541. [DOI] [PubMed] [Google Scholar]
9. 9. Saunders C.L., Abel G.A., Lyratzopoulos G. Inequalities in reported cancer patient experience by socio-demographic characteristic and cancer site: evidence from respondents to the English cancer patient experience survey. Eur J Cancer Care (Engl) 2015;24:85–98. doi: 10.1111/ecc.12267. [DOI] [PMC free article] [PubMed] [Google Scholar]
11. Lines L.M., Barch D.H., Zabala D., Halpern M.T., Jacobsen P., Mollica M. Associations between perceptions of care experiences and receipt of mental health care among older adults with cancer. J Clin Oncol. 2020;38(29_suppl):175. doi: 10.1200/JCO.2020.38.29_suppl.175. [DOI] [Google Scholar]
12. Maguire P, Selby P. Assessing quality of life in cancer patients. Br J Cancer. 1989;60(3):437-440. [DOI] [PMC free article] [PubMed] [Google Scholar]
13. Fitch K, Pyenson B. Cancer patients receiving chemotherapy: opportunities for better management. Milliman Client Rep. 2010;30:1-27. [Google Scholar]
14. Sharma N, Purkayastha A. Factors affecting quality of life in breast cancer patients: a descriptive and cross-sectional study with review of literature. J