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A DESCRIPTIVE HOSPITAL BASED OBSERVATIONAL STUDY OF REPRODUCTIVE CANCER PATIENTS IN TELANGANA REGION

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ABSTRACT
Cancer is a major cause of morbidity and mortality in developing and developed countries. A prospective observational study was conducted in 2 private hospitals in Telangana state; in a period of February to September 2017. Cancer patients who are suffering with reproductive cancers and who were admitted into the department of oncology were enrolled in the study. A total of 305 cancer patients; among them 295 patients are females and 10 patients are males. Majority of the cancer cases are of breast cancer followed by cervical cancer. Penile cancer is seen in males. Mostly, the duration of symptoms is for 6 months. In our study, there was lack of awareness on cancer and its screening techniques which became the cause for late detection of cancer. The commonly used treatment modality was concomitant use of chemotherapy and radiation therapy except for breast cancer. Breast cancer patients were treated with 8 cycles of chemotherapy followed by radiation. Treatment was given as per NCCN guidelines. Majority of the metastasis cases were seen in patients with breast cancer and liver was the major site for metastasis.

KEYWORDS: Cancer, Metastasis, Chemotherapy, Radiation Therapy, NCCN Guidelines.

INTRODUCTION
Cancer is the uncontrolled growth and spread of cells. It can affect almost any part of the body. The growths often invade surrounding tissue and can metastasize to distant sites. Many cancers can be prevented by avoiding exposure to common risk factors, such as tobacco smoke. In addition, a significant proportion of cancers can be cured, by surgery, radiotherapy or chemotherapy, especially if they are detected early. Cancer can affect almost any part of the body and has many anatomic and molecular subtypes that each required specific management strategies.[1] Cancer is the second leading cause of death globally and accounted for 8.8 million deaths in 2015. Lung, prostate, colorectal, stomach and liver cancer are the most common types of cancer in men, while breast, colorectal, lung, cervix and stomach cancer are the most common among women.[1] During the last 20 years, India has emerged as a fast growing economy with changes in lifestyle-related behaviour partially responsible for the increasing cancer burden.[2] In India, most of the population does not have access to a well organized and well regulated cancer care system. The diagnosis of cancer often leads to financial crisis which push entire families below the poverty line which may threaten their social stability.[3] India is going through epidemiologic transition. It is reported that the incidence of breast cancer is rising rapidly in India as a result of changes in reproductive risk factors, dietary habits and increasing life expectancy.[4] Breast cancer is the most frequent cancer in women globally and represents the second leading cause of cancer death among women (after lung cancer).[5] Cervical cancer also contributed nearly 8% of all cancers.[5] As per GLOBACON 2012, 14 million new cancer cases were diagnosed worldwide and approximately more than 8 million cancer deaths occurred. Whereas in India 1 million of the new cases and nearly 700 000 of the deaths occurred. Breast cancer was the most common cancer worldwide in women contributing more than 25% of the total number of new cases diagnosed in 2012.[6]

Methodology: This study was conducted in two private hospitals in Telangana region. It is a descriptive observational study done for 8 months. Inclusion criteria include patients diagnosed with cancer and receiving treatment in oncology department, patients who are able to respond to questions, patients who received at least two cycles of chemotherapy, patients who received at least 5 days of radiation therapy. Exclusion criteria include pregnant women, patients <20 years and >90 years, patients without Histo-pathological examination reports, Patients who did not respond to the telephone

calls for survival rate. Data was obtained from sources like patient case records, laboratory data, direct communication with patients (Questionnaire) and their care takers. Parameters such as demographics data, laboratory parameters (Histo-pathological reports, complete blood picture and results of radiology techniques) were collected and evaluated. Data collected is kept confidential and used exclusively for research purpose. Protocol was approved by the Institutional Ethical Committee.

RESULTS

A total of 305 patients have been enrolled in the study, out of which 295 patients were female and 10 patients are male. In our study, the mean age group affected was 51-60 years. I females, majority of the cases reported were of breast cancer followed by cervical cancer.TNM staging was done for breast cancer and FIGO staging was done for cervical cancer.

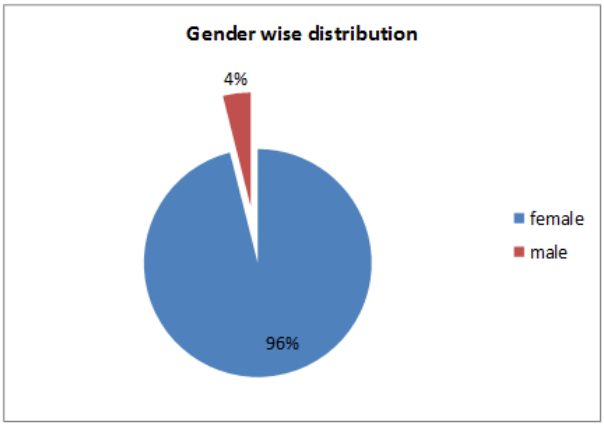

Fig. 1: Gender wise distribution of patients.

Among 305 patients, majority are females with 96% followed by 4% of males.

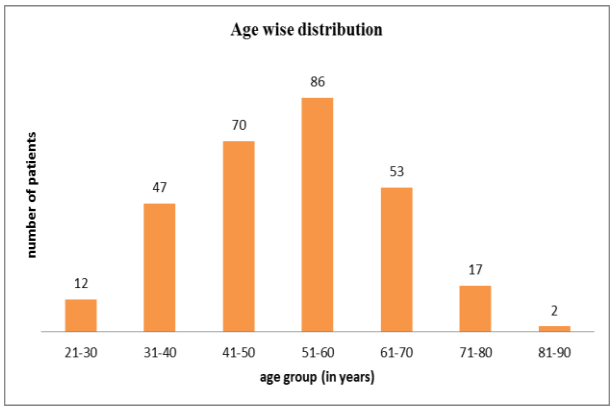

Fig. 2: Distribution of patient according to age groups.

In our study, 86 patients were in the age group of 51-60 followed by 70 patients in the age group of 41-50. Least number of patients were found in age group of 81-90. This indicates that reproductive cancers are more prevalent in menopausal age due to fluctuation of the hormones.

Table. 1: Distribution of patients according to age groups and type of cancer.

Age group (in years)	Breast cancer	Cervical cancer	Ovarian cancer	Penile cancer	Miscellaneous
21-30	7	2	2	-	1
31-40	25	16	5	1	-
41-50	40	31	8	3	1
51-60	44	29	6	2	9
61-70	25	21	4	1	1
71-80	6	6	-	3	2
81-90	1	1	-	-	-

Majority of the breast cancer patients were found in the age group of 51-60 years whereas, mostly cervical cancer was seen in age group of 41-50 years. Penile cancer was seen in patients of age group 51-60.

Table. 2: Distribution of cancer patients based on incidence and mortality.

Type of cancer	Incidence	Mortality
Breast cancer	149	6
Cervical cancer	106	2
Ovarian cancer	25	-
Penile cancer	10	-
Miscellaneous cancer	15	-

Breast cancer is the highest noted reproductive cancer in females followed by cervical cancer. Most of the mortality cases were found to be of breast cancer with liver and brain being the site of metastasis.

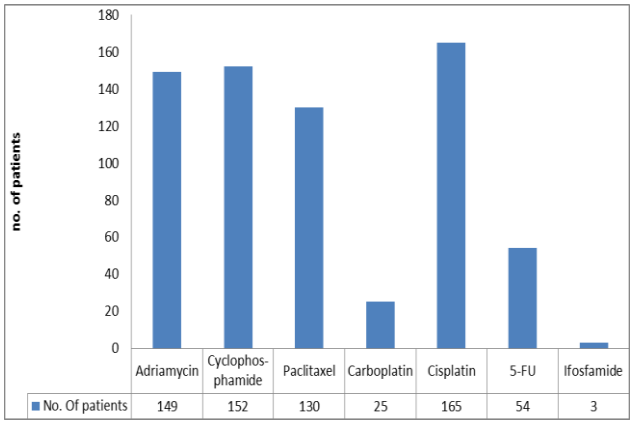

Fig. 3: Distribution of patients according to the use of chemotherapeutic agent.

As majority of the patients are treated with concomitant chemotherapy and radiation therapy, cisplatin was the most commonly prescribed drug. In concomitant chemotherapy and radiation therapy, cisplatin is the drug of choice which is known to potentiate the effect of radiation.

Table. 3: Distribution of patients as per demographic data and incidence of cancer.

Parameters	Breast cancer	Cervical cancer	Ovarian cancer	Penis Cancer	Miscellaneous
Occupational status					
Daily wagers	69	82	22	5	10
Home makers	11	4	1	-	2
Agriculture	11	11	-	2	2
Others	58	9	2	3	1
Marital status					
Married	131	94	20	9	11
Widowed/ separated	18	12	5	1	4
Locality					
Urban	12	21	2	1	-
Rural	137	85	23	9	15
Co-morbidities					
HTN	37	33	2	5	5
DM	11	16	2	6	4
Thyroid	8	12	-	2	1
Asthma	2	4	1	-	-
TB	5	3	-	-	-
CAD	3	-	1	-	-
Social history					
Alcoholics	12	13	2	6	1
Smokers	12	13	1	6	2
Alcoholic and smokers	10	14	-	6	1
Betel leaf	5	14	-	2	2
Toddy	16	17	-	2	2
Educational status					
Literate	25	6	4	2	2
Illiterate	124	100	21	8	13

In our study, there was lack of awareness regarding cancer and its warning signs due to illiteracy which in turn relates to the late detection of cancer.

Table. 4: Distribution of patients according to tumour cell type, duration of symptoms and treatment modalities of cancer.

Parameter	Breast cancer	Cervical cancer	Ovarian cancer	Penile cancer	Miscellaneous cancers
Cell type					
Squamous cell carcinoma	-	85	-	10	10
Duct cell carcinoma	133	-	-	-	-
Lobular carcinoma	16	-	-	-	-
Adenocarcinoma	-	21	25	-	5
Duration of symptoms					
1-2 months	11	5	-	-	3
2-6 months	10	43	2	1	2
6-12 months	128	58	23	9	10
Treatment					
Surgery	141	83	2	10	1
Chemotherapy	149	11	25	3	4
Radiation therapy	128	-	-	-	-
Chemoradiation	-	95	-	7	11

In our study, ductal carcinoma and squamous cell carcinoma were common types of breast cancer and cervical cancer respectively. Majority of the patients had duration of symptoms greater than 6 months. Except breast cancer and ovarian cancer, remaining cancers were treated with combination of chemotherapy and radiation therapy.

Table. 5: Distribution of breast cancer patients according to various parameters.

Parameters	No. of patients	Percentage
Affected site		
Right breast	85	54
Left breast	64	42.9
Clinical presentation		
Presence of lump	114	76.5
Pain in the breast and presence of lump	35	23.4
Staging[14]		
T_1	24	16.1
T_2	68	45.6
T_3	46	30.8
T_4	11	7.3
Receptor status		
ER +ve	38	25.5
PR +ve	21	14
ER and PR –ve	90	60.4
Chemotherapeutic regimen		
CMF	1	0.6
CAF	45	30.2
AC+T	103	69.1
Diagnostic tests		
FNAC	144	96.6
Mammogram and FNAC	5	3.3

ER- Estrogen receptor; PR- Progesterone receptor
CMF- cyclophosphamide + methotrexate+ 5-fluorouracil
CAF- Cyclophosphamide + adriamycin+ 5-fluorouracil
AC+T – Adriamycin + cyclophosphamide + taxane
FNAC- Fine needle aspiration cytology

Table. 6: Distribution of cervical cancer patients according to staging of cancer.

Stage	Number of patients	%
IB_2	11	10.3
IIA	38	35.8
IIB	24	22.6
III	10	9.4
IV	4	3
Staging not done	19	17.9
Total	106	100

Stage IB: clinically visible lesion more than 4 cm in greater dimension
Stage IIA: tumour without parametrial invasion
Stage IIB: tumour with parametrial invasion
Stage III: The tumour extends to the pelvic wall, and/or involves the lower third of the vagina, and/or causes hydronephrosis, or stops a kidney from functioning. No lymph nodes are involved, and there is no distant spread.

Among 106 cervical cancer patients, 57% patients were diagnosed to be in stage II and in 17.9% patients staging of the disease was not done.

DISCUSSION

In 2018, an estimated 1,735,350 new cases of cancer will be diagnosed in the United States and 609,640 people will die from the disease. The most common cancers (listed in descending order according to estimated new cases in 2018) are breast cancer, lung and bronchus cancer, prostate cancer, colon and rectum cancer, melanoma of the skin, bladder cancer, non-Hodgkin lymphoma, kidney and renal pelvis cancer, endometrial cancer, leukaemia, pancreatic cancer, thyroid cancer, and liver cancer.[7]

The number of new cases of cancer (cancer incidence) is 439.2 per 100,000 men and women per year (based on 2011–2015 cases). The number of cancer deaths (cancer mortality) is 163.5 per 100,000 men and women per year (based on 2011–2015 deaths). Cancer mortality is higher among men than women (196.8 per 100,000 men and 139.6 per 100,000 women). When comparing groups based on race/ethnicity and sex, cancer mortality is highest in African American men (239.9 per 100,000) and lowest in Asian/Pacific Islander women (88.3 per 100,000).[7]

In 2016, there were an estimated 15.5 million cancer survivors in the United States. The number of cancer survivors is expected to increase to 20.3 million by 2026. Approximately 38.4% of men and women will be diagnosed with cancer at some point during their lifetimes (based on 2013–2015 data). In 2017, an estimated 15,270 children and adolescents ages 0 to 19 were diagnosed with cancer and 1,790 died of the disease.[7]

Estimated national expenditures for cancer care in the United States in 2017 were $147.3 billion. In future years, costs are likely to increase as the population ages and cancer prevalence increases. Costs are also likely to increase as new, and often more expensive, treatments are adopted as standards of care.[7]

Breast cancer: As per Lindsey A.Torre *et al* 2012, incidence of breast cancer was 74.1% which is in contrast to our study where 48.8% had been reported.[8] This might be due to changes in the reproductive risk factors and dietary habits.

In our study, we found that mean age was found to be 45-55 years which is in contrast to other studies such as Elgaili *et al* 2010, (age range 35-40 years) and sandhu *et al* (mean age 47 years). This might be due to non-usage of oral contraceptives in our population.[9, 10]

Vinod raina *et al* stated that 470 (96.5%) patients presented with breast lump, 77 (15.8%) had pain and 24 (4.9%) had nipple discharge which is almost similar to our study, wherein 149 (100%) of the patients presented with lump in the breast and 42(28.1%) had pain.[11] Whereas sandhu *et al* stated that 87.9% of patients with breast cancer presented with isolated lump in breast.[10]

In a study by sandhu *et al.*, 61.5% presented with a history of more than 3 months duration and only 1.3% patients with a history of less than 15 days duration which is similar to our study where 85% patients had presented with symptoms more than 3 months.[10]

The histopathological findings reveal that 89.2% of patients with breast cancer have ductal cell carcinoma whereas 7% have lobular, which is in contrast with the study in north India by vinod raina *et al* wherein 92.8% patients have invasive ductal carcinoma followed by 2.9% patients with invasive lobular carcinoma.[11]

In a study conducted by Robert A. smith *et al* 2010, as a part of breast cancer screening, women should do breast self examination in their early 20s. Women must be counselled about the benefits and limitations of breast self examination (BSE). For women in their 20s and 30s, it is recommended that complete breast examination (CBE) be part of a periodic health examination, preferably at least every 3 years. Asymptomatic women aged ≥ 40 years should continue to receive a CBE as part of a periodic health examination preferably annually and annual mammography done at age 40 years but in contrast to our study none of the patients had been screened as above mentioned guidelines because of the Lack of awareness on signs and symptoms, different screening tests available and mortality rate in breast cancer. As the basic confirmatory test for cancer, fine needle aspiration cytology or excision biopsy or cone biopsy is used. Mammogram was done to 3% of patients outside the hospital.[14]

Like healthy breast cells, most breast cancer cells but not all have hormone receptors and respond to the signals

coming from these hormones. For hormone-receptor-positive breast cancer cells, hormonal therapy can be used to interrupt the influence of hormones on the cells' growth and overall functioning.[15] About 80% of all breast cancers are "ER-positive" (cancer cells grow in response to the hormone estrogen). About 65% of these are also "PR-positive" (cancer cells grow in response to progesterone). Vinod raina *et al* stated that 53.7% were ER positive which is in contrast with our study where the ER status is 25% and PR status is 14%.[11]

According to NCCN guidelines by William J.Gradishar *et al* 2017, Surgery, chemotherapy followed by radiation therapy are 3 approaches for the treatment of breast cancer.[11] In a study conducted by vinod *et al*, 88.7% patients underwent modified radical mastectomy (MRM) and 55% patients underwent breast conservation surgery which is in contrast to our study where 94.6% of the breast cancer patients underwent MRM.[11] In our study, 4 cycles of adriamycin with cyclophosphamide followed by 4 cycles of paclitaxel is the most common chemotherapeutic regimen which is as per NCCN guidelines. Among 149 patients, 69.7% patients were prescribed with the above mentioned regimen whereas 30.2 % patients were prescribed with cyclophosphamide with adriamycin and 5-flurouracil and only one patient was given with cyclophosphamide, methotrexate and 5-FU (CMF regimen) as she had mastectomy done elsewhere.

Vinod *et al* found that CMF regimen was the most commonly prescribed regimen and only 25% of the patients were treated with anthracycline based chemotherapy.[11] As per NCCN guidelines, receptor positive breast cancer is treated with tamoxifene (hormonal therapy). In our study where a normal chemotherapeutic regimen of 4 cycles of adriamycin and cyclophosphamide followed by 4 cycles of paclitaxel was given.[14]

As per NCCN guidelines by William J.Gradishar *et al* 2017 breast cancer patients should receive a dose of 45-50 Gy (gray) in 23-25 fractions which is similar to our study where the radiation dose used is 5000 CGy (centi-gray) in 25 fractions. Because this dose reduces the risk of local recurrence and has shown beneficial effect on survival rate.[14]

In our study, 6 metastasis cases of breast cancer have been reported and the site of metastasis being liver. The treatment given was as per NCCN guidelines i.e., combination therapy with CMF/AC/CMF.[14]

Cervical cancer

Cancer cases as well as mortality are increasing rapidly among Indian women, primarily because of low awareness and late detection. India accounts for the third highest number of cancer cases among women after China and the US, growing annually at 4.5-5%.

According to a report 'Call for Action: Expanding cancer care for women in India, 2017', cancer among women in India is estimated at 0.7 million. However, the real incidence is much more between 1 and 1.4 million per year as many cases go undiagnosed or unreported. India also ranks among the top two countries globally on mortality for key women-specific cancers. Data shows cervical and breast cancer mortality rates in India are 1.6 to 1.7 times higher than the maternal mortality, highlighting the significantly adverse mortality rates for women-specific cancers in the country. India topped the list for mortality for breast and cervical cancers and reported the second highest incidence for ovarian cancer globally.[13]

F.T Zohara *et al* 2017, in their study observed that women had unusual vaginal bleeding (26.4%), blood in stools/urine (20.4%), menstrual periods that are heavier (or) longer than usual (17.6%), 9% cited vaginal bleeding after menopause as warning signs. In our study, 74% cited vaginal bleeding after menopause, 26% considered menstrual periods that are heavier and longer than usual as warning signs.[15] This might be because of the lack of knowledge about the warning signs of cervical cancer which in turn cause delay in the diagnosis of cancer.

In Zohora *et al* 2017 study, multiple risk factors such as HPV infection (2.8%), smoking (14.8%), long term use of contraceptive pills (11.6%), patients without regular pap smear (4.4%) were observed. Whereas in our study 8 % of our patient population had single risk factor i.e., smoking.[15]

Luis G capote Negrin *et al* 2015, stated the relation between cigarette smoking and risk of cervical cancer. The presence of nicotine and the derivatives of tobacco smoke in cervical mucus suggest a possible biological mechanism through immune suppression, which encourages infection by the HPV. In our study, the relation between the risk of cervical cancer with smoking is unclear due to the lack of HPV screening tests.[16]

Swapnajaswanth M *et al* 2017 found that 60.5% were rural patients and 39.5% were urban and this observation is similar to a study done by rekha jeyakrishnan *et al* 2016 where 73% were rural and 27% were urban. It is in contrast to our study where 80% were rural and 20% were urban. The increase in the incidence of cervical cancer in rural people might be due to lack of awareness about hygiene like cleaning genital area after sex, materials used during menstrual cycle, sex during menstruation, cleaning of private parts daily, taking bath daily and use of toilets.[17, 18]

In a study conducted by rekha jeyakrishnan 2016, 74.4% were illiterate, 18.8% were 10^{th} grade or below, none of them were graduated (or) had a degree. Whereas in our study 99% were illiterate. This might have a relation with the awareness of the cervical cancer.[18]

Swapnajaswanth M *et al* 2017 stated that 65.5% were married, 34.5% were widowed/ separated but in our study 88.6 % were married and 11.3 % were widow/separated. This might not seem significant in our study.[17]

As per American cancer society recommendations for early detection of cancer in average-risk asymptomatic people by Robert A. Smith *et al* 2010, cervical cancer screening should begin approximately 3 years after a woman starts her sexual life, but no later than 21 years of age. Screening should be done every year with conventional pap tests or every 2 years using liquid-based pap tests. Women (30 years and above), who have had 3 normal test results in a row may get screened every 2-3 years with cervical cytology (either conventional (or) liquid based pap smear test) alone, or every 3 years with an HPV DNA test plus cervical cytology. Women ≥ 70 years of age who have had ≥ 3 normal pap smear tests and no abnormal pap smear tests in the last 10 years and woman who have had a total hysterectomy may choose to stop cervical cancer screening.[12] But in our study, there are no screening tests performed and as a basic confirmatory test for cancer, cervical biopsy is performed.

Pieluigi Benedetti-panici *et al* 2002, followed international federation of gynaecology and obstetrics (FIGO) system for staging of carcinoma of cervix which is similar to our study. This is standard for the staging of uterine cancers.[19]

Rekha jeyakrishnan *et al* 2016 found that 42.8% of the carcinoma of cervix were in II B stage, 28.5% were in III B stage which is contrast to our study where 35.8 % of the cervical cancer patients are in II A stage and in 17.9 % staging was not done.[18]

In a study conducted by rekha jeyakrishnan *et al* 2016, they stated that 97.8% were of squamous cell carcinoma and 2.2 % were adenocarcinoma whereas in our study 80.1% were of squamous cell carcinoma and 19.8 % were with adenocarcinoma.[18]

In a study conducted by rekha jeyakrishna *et al* 2016, 77.8% had radiation therapy (RT), 2.3% underwent surgery. In our study, 78.3 % underwent surgery, 89.6 % had chemoradiation followed by internal beam radiation therapy.[18]

As per NCCN guidelines by 2017, the provisional dose of radiation for cervical cancer patients were 45-50 Gy (in conventional fractionation of 1.8-2.0 Gy daily). In our study, the treatment given was as per NCCN guidelines.[20]

Ovarian cancer

As per European society of medical oncology guidelines by J.A. Ledermann 2013, estimated number of new ovarian cancer cases in Europe in 2012 was 65538 with 42704 deaths. In our study 12.3% were diagnosed with ovarian cancer. J.A. Ledermann 2013, stated that approximately 80% of advanced ovarian cancer cases were invasive serous carcinoma. In our study 100% of the patients with ovarian cancer were of invasive serous carcinoma. Most commonly seen symptoms of ovarian cancer were abdominal (or) pelvic pain, constipation, diarrhoea, urinary frequency, vaginal bleeding, abdominal distension and fatigue which is similar to our study.[21]

According to NCCN guidelines by Robert J.Morgan *et al* 2017, many patients underwent hysterectomy with bilateral salphingo-oophorectomy, omentectomy and lymphadenectomy of suspicious or enlarged nodes which is similar to our study.[22]

The recommended intravenous regimen accepted by a consensus of the NCCN panel includes iv paclitaxel 175 mg/m^2 over 3 hours IV infusion, followed by carboplatin IV over 1 hour on day 1 given every 3 weeks for 6 cycles which is similar to our study. Paclitaxel is added to platinum compounds to decrease the resistance caused by them.[22]

Penile cancer: Penile carcinoma is a neoplasm which mostly affects elderly patients; the usual age for this type of tumour is between the 6th and 7th decade of life.[23, 24]

Penile cancer is an aggressive and mutilating disease that deeply affects the patients self esteem. It is a rare neoplasia with a low incidence in developed countries. One of the highest world incidence is found in India with rates of 3.32/100000 inhabitants and the low incidence is in men born in Israel with rates close to zero. In western world, squamous cell carcinoma of the penis is a rare malignancy occurring mainly among elderly men above age 60 years and with a standardized annual incidence of less than 2 per 100,000 men. Luciano *et al* found that majority of penile cancer patients were in the age >66 years which was similar with our study.[25]

In our study, patients were in the age group of 55-65 years. Agarwal *et al* found that 64 patients underwent partial or total penectomy based on the extent of tumour.[26] In our study, 10 patients underwent partial or total penectomy. Partial or total amputation or emasculation according to tumour extent can be considered to be standard therapies. A conservative strategy is an alternative in very carefully selected patients whose tumours encompass less than half of the glans (Grade B) and for who close follow-up can be carried out.[27]

CONCLUSION

Among our study population, female are more prone to reproductive cancers than male. Majority of the patients had their duration of symptoms for 6 months. Based on socio-economic status of the patients, fine needle aspiration cytology was used as the basic confirmatory

test in diagnosing cancer. Due to lack of awareness on cancer and its screening techniques, majority of the patients were diagnosed in later stages. In our study, treatment of all the reproductive cancers was as per NCCN guidelines except receptor positive breast cancer. Metastasis was mostly seen in breast cancer cases with a progression period of 2 to 5 years. The major site of metastasis was found to be liver. As there is growing incidence of cancer in women, awareness among warning signs, screening tests are to be explained to the patients and care taker, so that they are diagnosed in early stage.

Pharmacist participation with the medical team in oncology unit contributes to a significant reduction in preventable ADR's. Many ADR's have not been brought to the notice of the health care professionals due to lack of spontaneous reporting. The presence of clinical pharmacist in oncology department will help in the identification of medication errors, if not corrected they would have worsened the condition of the patients and affect their quality of life. Clinical pharmacist in the oncology department can build up confidence in the cancer patients and can support them to face the treatment with a positive attitude and moral support. Majority of the adverse effects can be minimized with proper counselling and monitoring. Counselling about ADR's can either decrease the hospital stay or the expenditure. Counselling to care takers can create an awareness regarding the types of cancer, its risk factors, symptoms, specific screening tests, types of treatment modalities, management of adverse drug reactions that help in early detection of cancer. In terminally ill cancer patients, as a part of palliative treatment moral support has to be given. In our study, with the presence of clinical pharmacist in oncology department, majority of the patients were counselled regarding the adverse effect of the drugs and the precautions to be taken. This has helped in improving the awareness, medication adherence in the patients.

REFERENCES

1. http://www.who.int/cancer/en/
2. Rajender A. Badwe, Rajesh dikshit, M.laversanne and Fredie bray, "cancer incidence trends in India". Jpn J Clin Oncol, 2014; 44(5): 401-407 doi:10.1093/jjco/hyu040.
3. Mohandas K Mallath, David G Taylor, Rajender A Badwe, Goura K Rath, V Shanta, CS Pramesh, Raghunadharao Digumarti, Paul Sebastian, Bibhuti B Borthakur, Ashok kalwar, Sanjay kapoor, Shaleen kumar, Jennifer L Gill, Mani A kuriakose, Hemant malhotra, Suresh C Sharma, Shilin Shukla, Lokesh Viswanath, Raju T chacko, Jeremy L Pautu, kenipakapatnam S Reddy, kailash S Sharma, arnie D Purushotham, Richard sullivan "The growing burden of cancer in india: epidemiology and social context". www.thelancer.com/oncology, 2014 http://dx.doi.org/10.1016/s1470-2045 (14): 70115-9.
4. Giridhara Rathnaiah Babu, Srikanth Bodapati lakshmi, Jotheeswaran Amuthavalli Thiyagarajan "Epidemiological correlates of breast cancer in south India". Asian pacific journal of cancer prevention, 2013; 14.
5. Dumitrescu R "Understanding breast cancer risk-where do we stand in 2005?" J. cellular and molecular medicine, 2005; 9: 208-201.
6. Lindsey A. Torre, Freddie Bray, Rebecca L. Siegel, Jacques Ferlay, Joannie Lortet-Tieulent, Ahmedin Jemal "Global cancer statistics, 2012". CA CANCER J CLIN, 2015; 65: 87-108.
7. https://www.cancer.gov/about-cancer/understanding/statistics
8. Lindsey A. Torre, Freddie Bray et al, "Global cancer statistics". CA CANCER J CLIN 2015; 65: 87-108. doi:10.3322/caac.21262.
9. Elgaili M Elgaili, Dafalla O Abuidris, Munazzah Rahman, Arthur M Michalek, Sulma I Mohammed "Breast cancer burden in central sudan". International journal of women's health 2010; 2: 77-82.
10. Sandhu DS, Sandhu S, Karwasra RK, Marwah S "Profile of breast cancer patients at a tertiary care hospital in north india". Indian journal of cancer l January-march 2010; 47(1).
11. Raina V, bhutani, M Bedi R, Sharma A, Deo SV, Shukla NK, Mohanti BK, Rath GK "Clinical features and prognostic factors of early breast cancer at a major cancer centre in north India" Indian J cancer 2005 (cited 2017 jan 11); 42: 40-5.
12. Robert A.Smith, Vilma cokkinides, Durado brooks, Debbie saslow, Otis W. Brawley. "Cancer screening in United States, 2010- A review of current American cancer society guidelines and issues in cancer screening". CA CANCER J CLN 2010; 60: 99-119.
13. https://timesofindia.indiatimes.com/india/india-now-has-3rd-highest-number-of-cancer-cases-among-women/articleshow/60812041.cms.
14. William J. Gradishar "NCCN clinical practice guidelines in oncology guidelines for breast cancer" 2017.
15. Fatama Tous Zohora, Nibedita paul, shahin Mahmud, S.M. Neaz Mahmud, Abu zaffar shibly, "Awareness about early detection methods, symptoms and risk factors towards breast and cervical cancer among the female students of Mawlana Bhasani Science and Technology University (MBSTU), Santosh, Tangail, Bangladesh". Advances in breast cancer research, 2017; 6" 49-67 DOI: 10.4236/abcr.2017.
16. Luis G. Capote Negrin, "Epidemiology of cervical cancer in Latin America". ecancer 2015,9:577 DOI: 10.3332/ecancer.2015.577
17. Swapnajaswanth M, Suryanarayana S. P., Suman G., Murthy N.S. "A study to assess select risk factors for carcinoma cervix among patients attending kidwai memorial institute of oncology". Int J

Community Med Public Health 2017 Nov; 4(11): 4238-4243. http://www.ijcmph.com
18. Rekha jeyakrishnan "A prospective study of invasive cancer cervix and its epidemiology". University journal of surgery and surgical specialities, 2016; 2(7).
19. Pierluigi Benedetti- panici "Neoadjuvant chemotherapy and radical surgery versus exclusive radiaotherapy in locally advanced squamous cell cervical cancer: results from the Italian multicentre randomized study". Journal of clinical oncology, January 1 2002; 20(1): 179-188.
20. Nicole Mc Millian "NCCN clinical practice guidelines in oncology for cervical cancer". Version 1.2017- Oct 10, 2016.
21. J.A. Lederman "Newly diagnosed and relapsed epithelial ovarian carcinoma- ESMO clinical practice guidelines". Ann oncol 2013; 24(6): vi24-vi32.
22. Robert J Morgan "NCCN clinical practice guidelines in oncology guidelines for ovarian cancer". 2017.
23. G. Pizzocaro, L. Piva, G. Bandieramonte, and S. Tana, "Upto-date management of carcinoma of the penis," European Urology, 1997; 32(1): 5-15.
24. J. M. C ´ ozar, J. Navarro, J. de la Pe˜na, et al., "Controversias sobre la infadenectom´ıa regional en el carcinoma de pene," Archivos Espanoles de Urologia, 1991; 44(8): 951–955.
25. Luciano A. Favorito, Aguinaldo C. Nardi, Mario Ronalsa, Stenio C. Zequi, Francisco J. B. Sampaio, Sidney Glina "Epidemiologic Study on Penile Cancer in Brazil" International Braz J Urol, September - October, 2008; 34(5): 587-593.
26. A. Agarwal, D. Pai, N. A nanthakrishnan, S.R. Smile and C. Ratnakar "The histological extent of the local spread of carcinoma of the penis and its therapeutic implications" BJU International, 2000; 85: 299±301.
27. E. Solsonaa,*, F. Algabab, S. Horenblasc, G. Pizzocarod, T. Windahle "EAU Guidelines on Penile Cancer" European Urology, 2004; 46: 1-8.