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PATTERN AND TREATMENT INTENT OF CANCER PATIENTS SEEN AT RADIOTHERAPY UNIT, USMANU DANFODIYO UNIVERSITY TEACHING HOSPITAL (UDUTH).

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Abstract

Cancer, one of the world's leading health threats, In 2022, it was responsible for approximately 20 million new cases and close to 10 million cancer-related deaths globally. It stands as one of humanity's most devastating burdens, driving both immense suffering and an urgent call for action worldwide. The aim of this study is to assess the pattern and treatment intent of cancer patient seen at Radiotherapy Unit UDUTH

This study was conducted in the Radiotherapy Unit of Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria. It employed a retrospective study design, where the records of patient seen at radiotherapy unit from June, 2024 to May, 2025 was reviewed n= 439, using a data capture sheet and the data was analyzed using IBM SPSS version 27.0 and Microsoft excel. The mean age of the study population was 47.24 years, The highest age group found to have cancer was 50-59 and ≥ 60years . It also showed that more female are diagnosed with cancer which accounted for (n=288, 65.6%) than male (n=151, 34.4%), breast cancer accounted for marked predominance (n=117, 26.7%). Most of the patients presented at stage IV (n=138, 45.4%) and the treatment intent was mostly palliative.

Conclusion: The study reveals a high cancer burden among older adults, predominantly women, largely due to breast and cervical cancers, with most cases presenting at advanced stages because of poor early detection and limited awareness.

Keywords: Pattern, Cancer, Treatment Intent.

Introduction

Cancer is a heterogeneous group of malignant disorders arising from genetic and epigenetic alterations that disrupt normal cellular regulatory mechanisms, leading to uncontrolled proliferation, resistance to cell death, loss of differentiation, tissue invasion, and the potential for metastasis to distant organs (WHO,2022). Cancer is a leading cause of morbidity and mortality worldwide, with approximately 20 million new cases and close to 10 million cancer-related deaths reported globally in 2022 (Global Cancer Observatory, 2024). Demographics-based predictions by the International Agency for Research on Cancer (IARC) indicate a rise in the global cancer burden to 35 million by 2050, a 77% increase from the 2022 level (Bray *et al.*, 2024). In Nigeria, cancer poses a significant public health challenge, accounting for an estimated 127,000 new cases and 79,000 cancer-related deaths annually (IARC, 2024). Nigeria has one of the highest cancer mortality rates in Africa, with a mortality-to-incidence ratio of 0.62, indicating a high probability of death after diagnosis annually (IARC, 2024). Some of the most common types include cervical cancer, breast cancer, prostate cancer, bladder cancer, among others (NCI, 2024).

In 2022, breast cancer accounted for 13.3% which was the most prevalent cancer. The next most prevalent cancers were prostate, colorectum, lung, and non-melanoma skin cancer. Lung cancer was the leading incident cancer accounting for 12.4% of new cases and cancer deaths accounting for 18.7% of cancer deaths. In 2050, lung cancer is projected to be the leading cause of cancer accounting for 13.1% of new cases and cancer deaths accounting for 19.2% of cancer deaths (Bizuayehu et al., 2024).In Nigeria, The commonest sites of primary disease were breast 81(25.5%), cervix 74 (23%), head and neck 43 (13.5%), gastrointestinal 49 (12.6%) and genitourinary cancers 23 (7.2%) (Folorunso et al., 2020).

Cancer management involves a multidisciplinary approach, incorporating a range of strategies tailored to the specific type, stage, and location of the cancer (NCI, 2024). Some of the traditional and most widely used treatment methods include **surgery, chemotherapy** and **radiation therapy.** Modern modalities include hormone-based therapy, anti-angiogenic modalities, stem cell therapies, immunotherapy, and dendritic cell-based immunotherapy (Abbas & Rehman 2018). While some individuals with cancer may undergo only one form of treatment, most receive a combination of treatments, such as surgery followed by chemotherapy and radiation therapy, to improve their chances of recovery and quality of life (NCI, 2024).

Radiation therapy, or Radiotherapy, is a cancer treatment that uses high doses of radiation to kill cancer cells and shrink tumors (NCI, 2024). Radiotherapy can be used as a curative treatment to eliminate cancer cells, as an adjuvant treatment to prevent recurrence, or as a palliative treatment to relieve symptoms and improve quality of life. It has become the most important non-surgical cancer therapy, used in more than half of

all patients with cancer, whether for curative or palliative intent (Barton, Frommer and Shafiq, 2006).

Radiation therapy are of two forms; External beam radiation therapy or Teletherapy which refers to radiotherapy treatment in which the source of radiation is located away from the patient and Brachytherapy meaning treatment at short distance, in which sources of radiation are placed at close proximity to, or directly in the target volume (Washington & Lever, 2015).

A retrospective survey conducted by Geofery et al. (2015) on cancer cases referred to the Radiotherapy and Oncology Unit of ABUTH, Zaria, between January 2004 and December 2013. 3,934 were reviewed. The findings revealed that cervical cancer had the highest incidence, accounting for 1,083 cases (27.5%), while intestinal cancer was the least common, with only one recorded case (0.02%). Of the total patients, 57.55% (2,264) received radiation therapy, whereas 42.45% (1,670) underwent chemotherapy or surgery. The study also indicated a higher cancer prevalence in females (66.18%) compared to males (33.6%). Regarding age distribution, the highest incidence was observed in individuals aged 40–50 years (25.74%), while the lowest was in the 91–110 age group (0.05%).

A study conducted by Folorunso et al. (2020) on the "Pattern and Outcome of Admission of Cancer Patients at Radiation Oncology Ward, University College Hospital, Ibadan, Nigeria" revealed alarming statistics. The study, which covered cancer admissions between June 2018 and May 2019 with a total of 318 cases, showed a marked female predominance. Breast (25.5%) and cervical (23%) cancers were the most common, with most patients admitted at advanced stages, particularly stage 4.

 The findings of this study are expected to serve as a data for making recommendations to the relevant authority which in turn assist in policy making. The findings of this study are expected to serve as to guide healthcare providers. This study aims at assessing the pattern and intent of cancer cases presented at the radiotherapy unit of Usmanu Danfodiyo University Teaching Hospital UDUTH Sokoto.

Materials and Methods

This study design was retrospective, conducted in the Radiotherapy Unit of Usmanu Danfodiyo University Teaching Hospital (UDUTH),Sokoto. The records of all cancer patients seen at radiotherapy UDUTH from June 2024 to May 2025 was reviewed and data was collected using a data capture sheet, This instrument captured key variables such as patient demographics, cancer type, stage at time of presentation and therapeutic intent. Patients with significant missing information were excluded from the study. The collected data was analyzed using Statistical Package for Social Science (SPSS) Version 27 and Microsoft excel. Ethical approval was obtained from the Human Research and Ethics Committee of Usmanu Danfodiyo University Teaching Hospital (UDUTH).

Result

Table 1: Sociodemographic distribution of study population

Out of all the 439 patient records used for the study, 151 were males and 288 were females which accounts for 34.4 % and 65.6% respectively. The study population was divided into six age groups; <20, 20–29, 30–39, 40–49 , 50–59 ≥60 years, and the analysis showed that the distribution of the age group are as follows <20 (n=31, 7.3%), 20–29(n=26, 6.1%) , 30–39 (n=62, 14.6%),, 40–49(n=93, 21.9%) , 50–59 (n=106, 25%) and ≥60((n=106, 25%). Age wasn't indicated in 15 patients' records as shown below.

Variables	Frequency	Percentage (%)
Age		
<20	31	7.3
20–29	26	6.1
30–39	62	14.6
40–49	93	21.9
50–59	106	25.0
≥60	106	25.0
Total	424	100.0
Gender		
Male	151	34.4
Female	288	65.6
Total	439	100

Table 2: Cancer type distribution

The cancer type distribution among the 439 study population are breast cancer (n=117, 26.7%), cervical cancer (n=79, 18%), Nasopharyngeal (n=25, 5.7%), Rectal (n=24, 5.5%), Laryngeal (n=17. 3.9%), Non-melanoma skin cancer (n=17, 3.9%), Bladder (n=15, 3.4%), Anorectal (n=11, 2.5%), prostate (n=12, 2.75), other cancer which includes pancreatic, leimyosarcoma, dermatofibrosarcoma protuberance, submandibular, retinoblastoma, osteosarcoma, rhabdomyosrcoma, wilms tumor, gastric, hodgkin lymphoma, non-hodgkin lymphoma, mutiple myoloma, sinonasal, carotid body tumor, angiosarcoma, adenocarcinoma, giant cell tumor, sebaceous cell tumor, melanoma, vagina vault tumor,pituitary cancer, neuroblastoma, seminoma,astrocytoma, spinal tumor, endometrial, oesophageal, maxillary,renal cell carcinoma, glioma, mucoepithelial carcinoma,hemangioma accounted for (n=122, 27.8%) as shown below.

Cancer type	Frequency	Percentage
Breast	117	26.7
Cervix	79	18.0
Nasopharyngeal	25	5.7

Rectal	24	5.5
Larynx	17	3.9
Non-Melanoma Skin	17	3.9
Bladder	15	3.4
Prostate	12	2.7
Anorectal	11	2.5
Others	122	27.8
Total	439	100

Stage of cancer presentation

138 (45%)

72 (23.5)   74 (24.1%)

23(7.45%)

I   II   III   IV
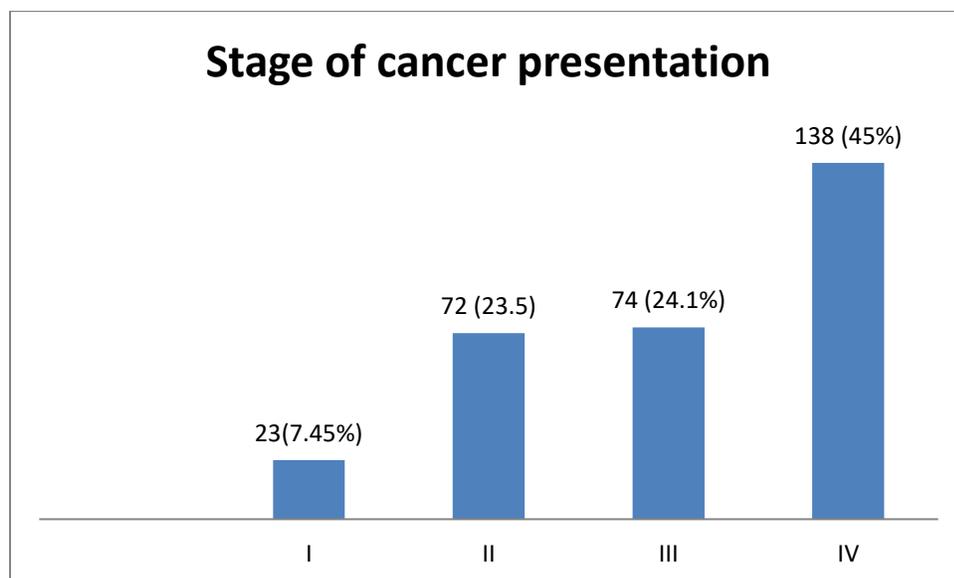
Figure 1: Distribution of stage presentation

Out of the 439 patient records reviewed, stage of cancer at the time of presentation was not recorded for 132 patients, 307 (patient's records have the stage at which the cancer was presented. The distribution of the stage of presentation are as follows; stage 1 (n=23, 7.45%), stage II (n=72, 23.5%), stage III (n=74, 24.1%) and stage IV (n=138, 45%) as shown in the figure above.
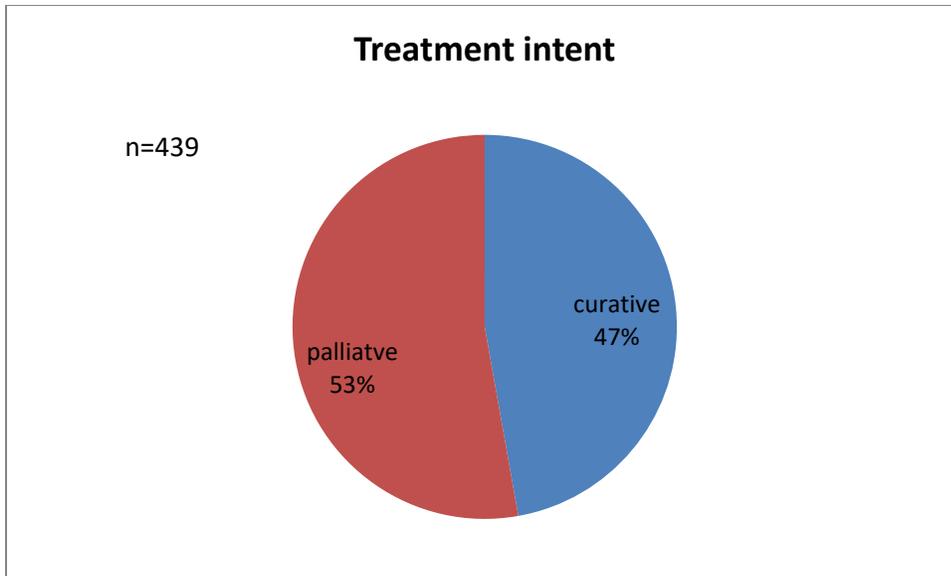
Figure 2: Distribution of Treatment intent

Out of all the 439 patients record reviewed 207 patients (47.2%) are for curative treatment intent while 232 (52.8%) were for palliative intent as shown in figure 2 above.

Table 3: Age distribution of cancer type

The Table below shows the distribution of cancer types across various age group,the distribution of breast cancer across age group are <20 (0),20–29 (3), 30–39 (28), 40–49 (38), 50–59 (33) and ≥60 (12). Cervical cancer distribution among age groups are <20 (0),20–29 (0), 30–39 (7), 40–49 (24), 50–59 (22) and ≥60 (25). The distribution of nasopharygeal cancer among age groups are <20 (5),20–29 (2), 30–39 (3), 40–49 (6), 50–59 (4) and ≥60 (4). Rectal cancer distribution among various age are <20 (0),20–29 (4), 30–39 (5), 40–49 (6), 50–59 (2) and ≥60 (6). Laryngeal cancer distribution among various age <20 (0),20–29 (0), 30–39 (0), 40–49 (2), 50–59 (8) and ≥60 (7). For Non melanoma skin cancer the distribution is as follow; <20 (0),20–29 (1), 30–39 (2), 40–49 (3), 50–59 (4) and ≥60 (6).Bladder cancer distribution among age group are <20 (0),20–29 (0), 30–39 (2), 40–49 (4), 50–59 (3) and ≥60 (5) also the age distribution of prostate cancer are <20 (0),20–29 (0), 30–39 (0), 40–49 (0), 50–59 (5) and ≥60 (6). Anorectal cancer have age distribution of <20 (0),20–29 (3), 30–39 (2), 40–49 (2), 50–59 (1) and ≥60 (2). Other cancer have distribution across age as <20 (26),20–29 (13), 30–39 (13), 40–49 (8), 50–59 (24) and ≥60 (33).

Variable	Type of cancers									
	Breast	Cervical	NPC	Rectal	Larynx	NMSC	Bladder	Prostate	Anorectal	others
Age										
<20	0	0	5	0	0	0	0	0	0	26
20–29	3	0	2	4	0	1	0	0	3	13
30–39	28	7	3	5	0	2	2	0	2	13
40–49	38	24	6	6	2	3	4	0	2	8
50–59	33	22	4	2	8	4	3	5	1	24
≥60	12	25	4	6	7	6	5	6	2	33
Total	114	78	24	23	17	16	14	11	10	117
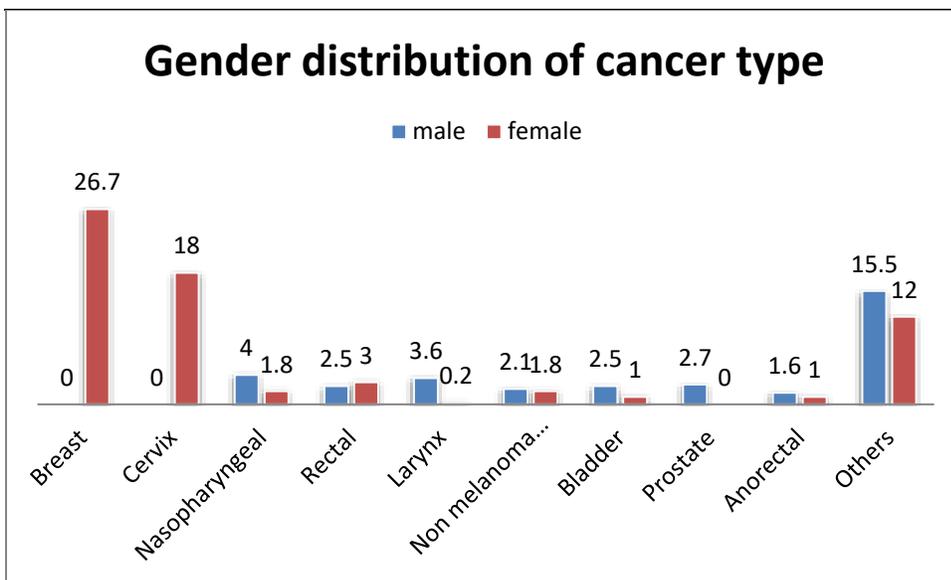
Figure 3: Gender distribution of cancer type

The figure above shows the gender distribution of cancer with breast and cervical cancer affecting only female, prostate cancer affecting only males. Male shows higher percentages in nasopharyngeal, laryngeal, nonmelanoma skin cancer, bladder cancer, anorectal cancer and other cancers and female have higher percentages in rectal cancer.

DISCUSSION

This study was carried out to evaluate the pattern of cancer, stage at time of presentation of cancer and the treatment intent of cancer patient seen at radiotherapy unit Usmanu Danfodiyo University Teaching Hospital Sokoto State, Nigeria between June 2024 to May 2025.

The study population was divided into six age groups, the mean age of the study population is 47.24 years, the age group which is most affected with cancer are 50–59 (n=106, 25%) and ≥60((n=106, 25%), which is similar to a study conducted at by Singla

et al. (2021) in Punjab, India where the highest incidence of malignancy was between 41–70 years, and Nwafor and Nwafor (2018) in Akwa Ibom, Nigeria, who noted a peak among 60–69 years. Similarly, Khan et al. (2013) in Nepal found reproductive cancers in women and respiratory cancers in men peaking in the 40–50 age range. This could be due to known fact of increase in the risk of cancer with aging due to biological changes (accumulation of mutation, epigenetic alteration), immune system changes, genomic instability and accumulated exposures e.t.c.

Out of all the 439 patient records used for the study, 151 were males and 288 were females which accounts for 34.4 % and 65.6% respectively. Gender distribution in this study showed a marked female predominance driven largely by breast and cervical cancers. This is similar to findings from multiple regions: Aggarwal et al. (2015) in Punjab reported a female-to-male ratio of 1.33:1, Rick et al. (2019) in Ethiopia found 78% of cases were female, and Aliyu et al. (2015) in Sokoto also reported 77.1% females. Nwafor and Nwafor (2018) in Akwa Ibom (59.7% females) and Usman et al. (2018) in North-Eastern Nigeria (61% females) reported similar dominance.

The cancer type distribution among the 439 study population are breast cancer (n=117, 26.7%), cervical cancer (n=79, 18%), Nasopharyngeal (n=25, 5.7%), Rectal (n=24, 5.5%), Laryngeal (n=17. 3.9%), Non-melanoma skin cancer (n=17, 3.9%), Bladder (n=15, 3.4%), Anorectal (n=11, 2.5%), prostate (n=12, 2.75), other cancer which includes pancreatic, leimyosarcoma, dermatofibrosarcoma protuberance, submandibular, retinoblastoma, osteosarcoma, rhabdomyosrcoma, wilms tumor, gastric, hodgkin lymphoma, non-hodgkin lymphoma, mutiple myoloma, sinonasal, carotid body tumor, angiosarcoma, adenocarcinoma, giant cell tumor, sebaceous cell tumor, melanoma, vagina vault tumor,pituitary cancer, neuroblastoma, seminoma,astrocytoma, spinal tumor, endometrial, oesophageal, maxillary,renal cell carcinoma, glioma, mucoepithelial carcinoma,hemangioma accounted for (n=122, 27.8%) which similar to a study conducted by Aggarwal et al. (2015) in India who noted breast and cervical cancers as predominant among women while Kibret et al. (2022) in Ethiopia also reported breast and cervical cancers as most common. Usman et al. (2018) in Northeastern Nigeria reported breast cancer (18.8%), and cervical cancer (11.5%) being most frequent, while Folorunso et al. (2020) in Ibadan also identified breast (25.5%) and cervical (23%) cancers as leading diagnoses. Ifeoma et al. (2017) across three hospitals in Enugu identified breast and cervical cancers as the most common malignancies in the region while Aliyu et al. (2015) in Sokoto reported Cervical cancer (36.67%) and breast cancer (35.24%) as the most common. In contrast, South-Asian reports such as Awal et al. (2009) and Sharmin et al. (2022) highlighted lung cancer as the most common in males, with breast leading in females, while oral cavity and pharyngeal cancers also featured prominently.

Out of the 439 patient records reviewed, stage of cancer at the time of presentation was not recorded for 132 patients (30.1%), 307 (69.9%) patient's records have the stage at which the cancer was presented. The distribution of the stage of presentation are as

follows; stage 1 (n=23, 7.5%), stage II (n=72, 23.5%), stage III (n=74, 24.1%) and stage IV (n=138, 45%)This finding is similar to the study conducted by Aggarwal et al. (2015) in Punjab, where 74% were diagnosed late, and Rick et al. (2019) in Addis Ababa, where 73% presented at advanced stages. Aliyu et al. (2015), in the same study location but at an earlier period, also recorded about 78.4% of patients at Stage III or IV. The persistence of late presentation across regions highlights systemic delays in detection and referral, poor cancer awareness, and limited screening programs. Notably, Folorunso et al. (2020) linked advanced stage at admission in Ibadan to significantly higher mortality, a risk likely mirrored in our setting.

Out of all the 439 patients record reviewed 207 patients (47.2%) are for curative treatment intent while 232 (52.8%) were for palliative intent, This is similar to the study conducted by Rick et al. (2019) in Ethiopia, where 62% received palliative radiotherapy, and Aliyu et al. (2015) in Sokoto, who also reported a dominance of advanced disease requiring palliative care.

In this study, the distribution of cancer among various age group are as follow; breast, nasophyrygeal cancer are higher in 40-49 age group, also cervical, non-melanoma skin disease, bladder, prostate and others are higher in ≥ 60 age group, rectal is higher in the age group 40-49 and in ≥ 60 , laryngeal cancer is higher in the age group 50-59 years and anorectal cancer is higher in 20-29 age group. The age-related cancer distribution in this study mirrors patterns seen in multiple low- and middle-income countries. Most cancers peak among middle-aged women (breast, cervix) and older men (prostate, head and neck), as reported by Aggarwal et al. (2015), Usman et al. (2018), and Singla et al. (2021). Pediatric cases remain few but significant, aligning with findings from Sharmin et al. (2022). This study's nasopharyngeal cancers in patients under 20 stands out as an unusual trend, potentially linked to local genetic or environmental factors requiring further study. In contrast, Awal et al. (2009) found lung cancer dominating older men, a trend less evident in this study due to fewer lung cancer cases.

Gender specific cancer distribution in our data reinforces known epidemiological trends breast and cervical cancers were entirely female, prostate cancer entirely male, while head-and-neck and bladder cancers skewed toward men. These patterns mirror reports by Khan et al. (2013) in Nepal, Awal et al. (2009) in Bangladesh, and Nwafor and Nwafor (2018) in Nigeria, where head-and-neck and prostate cancers were strongly male-linked. Such parallels across regions highlight shared exposure to risk factors such as tobacco and alcohol for men and reproductive/hormonal drivers for women despite geographical and cultural differences.

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