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Research Article

Pattern of Clinical Presentations, Diagnosis and Management Modalities of Prostate Cancer Patients at TASH Radiotherapy Center, AA, Ethiopia

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Abstract

Background: *Prostate cancer is the most common cancer among men worldwide, with higher mortality in low and middle-income countries. In Ethiopia, it is the second most common cause of cancer morbidity and mortality among men. There is limited data on clinical presentation and management of prostate cancer patients in Ethiopia. Thus, this study is conducted to assess clinical presentation s and management of prostate cancer at TASH, Radiotherapy Center, and Addis Abeba Ethiopia.*

Methodology: *A retrospective study was conducted among prostate cancer patients' seen from 2016 to 2020 in TASH, radiotherapy center. SPSS version 25 was used for analysis of our data, and Descriptive statistics (mean, SD, frequency, percentage) was used. Finally, tables and graphs were used to present the result.*

Results: *A total of 120 patients were included for analysis. Mean age at diagnosis was 67.75±9.8 years (range 40-90 years); and 119 patients (99.2%) were symptomatic at diagnosis. Median PSA level at diagnosis was 100 ng/mL (range 0.9–3390 ng/mL); and was >100ng/ml in 45 patients(37.5%) of patients. About 92 patients (76.7%) had two and more imaging modalities; chest x-ray (CXR) in 58 patients (48.3 %) , Abdominal-pelvic Ultrasound 73 patients (60.8%), CT Scan 68 patients (56.7 %), and MRI in 57 (47.5 %) patients. About 11patients (9.2 %) Chest X ray or /and Abdominal Ultrasound was used for staging and diagnosis, and 107(89.2%) patients vertebral or/and abdominopelvic CT and /or MRI, and 25(23.4 %) of patients were with both Vertebral and abdominopelvic CT scan and /or MRI. Stage 4 metastatic disease accounted for 86(71.7 %) patients. Biopsy was conducted for 74(61.7 %) patients, and Gleason Score was reported in 47.5% patients. All patients received at least one-treatment modalities, and 72(62.3 %) patients two and more modalities. ADT was the most frequently used treatment modality; and antiandrogen medications (goseralin and or /bicalutamide) in 38(34.9%) patients, Orchiectomy 36(33.0%) patients, and combination therapy in 35(32.1%) patients. Chemotherapy was used in 6 cases with progression on ADT. About 66(55%) patients were treated with palliative RT.*

Mean time for treatment was 21.8±36.6 (range1-270 days), and in 102(85 %) patients treated Within One Month of Diagnosis.

***Conclusion**: Majority present with high PSA level and metastatic disease at presentation, and there was gap in diagnostic tests in terms of biopsy, GS and a imaging modalities for diagnosis and staging. Screening for early diagnosis and improvement in staging work up needs improvement.*

Abbreviations

AAU -Addis Ababa University

ACS - American Cancer Society

AIDS - Acquired Immune Deficiency Syndrome

AJCC - American Joint Committee on Cancer

CHS - College of Health Science

CI- Confidence Interval

CRT Concurrent Chemo Radiotherapy

CXR - Chest X-Ray

CT- Computed Tomography

DM - Diabetes Mellitus

EBRT- External Beam Radiotherapy

ECOG- Eastern Cooperative Oncology Group

FMOH- Federal Ministry of Health

FNAC- Fine Needle Aspiration Cytology

GLOBOCAN - Global Burden of Cancer

HIV - Human Immune Virus

HTN- Hypertension

IAEA- International Atomic Energy Agency

INCTR - International Network for Cancer Treatment and Research

mpMRI –multi parametric Magnetic Resonance Imaging

NCD- Non-Communicable Disease

Introduction

Background

Prostate cancer is the second most common and fifth most aggressive neoplasm among men worldwide**(**1**)**. According to recent GLOBOCAN data in 2020, global incidence of prostate cancer was reported to be about 1.4 million **(**2**)**. According to this report, prostate cancer was the fourth most common neoplasm worldwide, comprising 7.3% of all cancer diagnoses **(**after breast, lung, and colorectal cancers**)**. In addition, in same year Prostate cancer ranked as the 8th most common cause of cancer mortality accounting about 3.8% of all cancer deaths worldwide. It is also reported that in Sub-Saharan Africa and the Caribbean regions prostate cancer was reported as accounting for the greatest rates of mortality **(**3**)**. In developed countries Prostate cancer survival rate shown to steadily improving over past decades **(**1**)**. In US 5 years survival rate increased to 97.8% in 2016 from 66.9% in 1975**(**2**)**.

Advanced age, race, genetics, family history, obesity and smoking are among few extensively researched risk factors for prostate cancer **(**1**)**. Prostate cancer is Common among elderly male mainly due to increasing PSA test and increased life expectancy **(**4,5**)**. In addition among African Americans and with individuals positive family history found to increase risk at age of 40 compared 50 years among white with negative family history **(**5**)**. Black race was also associated with increased risk of developing and dying by prostate cancer. In the US, African Americans are more likely to be diagnosed with prostate cancer and 2.5 times more likely to die of the disease **(**6**)**. Among prostatic cancer individual Genetics accounted for about 5% whereas positive family history was reported in about 20%**(**5,7,8**)**. Obesity not only implicated as one of modifiable risk factor **(**1**)** but also associated with increased as risk of prostate cancer specific mortality, more aggressive disease, and more treatment failure **(**8**)**. Likewise cigarette smoking increase risk of developing prostate cancer **(**9**)** and mortality **(**10**)**.

While PSA is expected to normally rise with age (due to BPH), a PSA level of 4–10 ng/mL is considered borderline and portends an approximately 25% risk of prostate cancer; a PSA > 10 is associated with a greater than 50% risk (11). Both the benefit and downside of Routine PSA testing for screening have been reported (1). PSA testing significantly improved prostate cancer survival rates due to earlier detection of disease, allowing for resection and local treatment prior to metastasis (11) , with downside of this for lower risk individuals being over diagnosis in causing them to undergo unnecessary and invasive diagnostic procedures like biopsy(12). The American Cancer Society recommends PSA testing for average risk men starting at 50 years of age, African Americans at 45 years of age, and at 40 years of age for high-risk men (with an early age first-degree relative diagnose with prostatic cancer), commonly followed up with a biopsyfor those with Positive PSA testing(1). However, the US Preventive Task Force does not recommend PSA screenings on account of the harms outweighing the benefits (12). Finally, the Disease is staged clinically as well as pathologically using the Gleason scoring system (1).

National guidelines have become more conservative with treatment, recommending for watchful waiting and observation in older men with low to intermediate risk disease (1). For higher risk disease, prostatectomy (robotic may be safer) and/or external beam radiotherapy are the most common treatments, followed by long-term ADT. When prostate cancer progressed on ADT, next generation endocrine therapies like enzalutamide, often in combination with cytotoxic agent docetaxel, have become the standard of care. Other promising options include pembrolizumab for PDL1 and MSI-high disease, Radium-223 for bone metastases, and PARP inhibitors for those with mutations in homologous recombination (most commonly BRCA2).

In Ethiopia, similar to other low-income countries, non-communicable diseases including cancer are emerging. Prostate cancer is the third most incident cancer next to breast and cervical cancer and the eighth cause of cancer death in both sexes in 2013(13). In 2015, there were 2269 estimated new patients of prostate cancer in Ethiopia(14). TASH study the overall 2-, 3- and 5-year survival of prostate cancer patients in Ethiopia is very low(15). The cancer stage at diagnosis and treatment modalities are significant prognostic determinants of survival. Therefore, early detection through screening and timely initiation of treatment is essential to improve the survival of prostate cancer patients.

Although international guidelines for prostate cancer management exist, large-scale surveys are needed in the country, in view of the high incidence of this cancer and the predisposition of its populations to prostate cance. In this regard, accurate data in the country is important to evaluate the burden of disease, and, when

complemented with detailed assessment of diagnosis, care and management, can provide important information on the health system organization. However, to my knowledge I could not found any study in both the country and institutional level to assess pattern of presentation and the management of prostate cancer patients in the Ethiopia.

Therefore, the aim of this study will be to analyze pattern of presentation and therapeutic procedures among patients with prostate cancer and the clinical characteristics according to age, in TASH RTC from 2016 to 2020 using data from the MR of the patients with prostate cancer.

Statement of the problem:

Ethiopia is home to a growing population of more than 105 million people and is expected to become the ninth most populous country in the world by 2050 with rising cancer burden in parallel. Despite the increment of cancer burden, much attention is still on the communicable diseases like HIV/AIDS, malaria, and tuberculosis. The inadequate attention of governmental organizations, policy makers and non-governmental organizations could be due to low awareness on the scale of burden of cancer in the country.

As opposed to large academic institutions or private canters in affluent health care environments, the radiation oncologist practicing in a resource-limited setting is faced with a different reality. The paucity of resources is reflected in the limited availability of treatment equipment and quality assurance equipment. Shortage of trained staff in sufficient numbers is a chronic problem in the developing world. There is limited, if any, access to published literature, and in many regions the language barrier is an additional problem.

In countries with limited healthcare resources, an even stronger argument can be made for conservative management. As the severity or extent of the disease increases, the evidence for intervention becomes more compelling and the degree of morbidity associated with treatment is increasingly justified by the benefits of therapy as reported by the results of phase III trial. Tikur-Anbessa Specialized Hospital, outpatient and inpatient based cancer registry that collects any data of cancer patients in Radiotherapy Center, an overseas patients from any region of Ethiopia with a population of about 100 million inhabitants.

Most of our prostatic cancers patients have advance disease at diagnosis**(**15**)**, and there is diversity on histological types of these cancers.

The suggested causes for late stages of the disease are: lack of adequate awareness of our society on cancer, social stigma on cancer patients, economic problems, lack of cancer centers in the nearby to the society.

Patients also go to local healers and holy sprits than to modern medicine especially in rural areas. So far, there are no other analysis done on pattern of disease and stage of diagnosis for prostate cancer.

Hence, this study helped to determine the clinical stage at presentation, and histopathological types and the differentiation among patients treated in TASH hospital. This study also described the age, geographic distribution of prostate cancer patients treated at TASH. It also analyzed patterns of care given in this center and possible associated risk factors for these cancers.

Significance of the Study:

Knowledge about clinic-pathologic and pattern of care including: prostate cancer presenting symptoms and signs, age at presentation, diagnostic and staging modalities used, time for initiation of therapy after diagnosis and treatment type will be used as baseline data for policy makers and other concerned body to give attention on these cancers. These concerned bodies will work to increase awareness of our societies on cancers and try to increase cancer centers to decrease treatment delay. The study will also stimulate other researchers to do further studies on prostate cancer in Ethiopia.

Objectives of the Study

General Objective

- To assess clinical presentation, diagnosis and management modalities of prostate cancer patients in Tikur Anbessa Specialized Hospital, Radiotherapy Center, Addis Abeba Ethiopia.

Specific objectives:

- To describe characteristics of prostate cancer patients at diagnosis.
- To describe clinical presentation, staging and base of diagnosis of prostate cancer patients at diagnosis.
- To describe the pattern of treatment modalities for prostate cancer patients.

Methods

Study Design:

This study utilized a single institution- based cross- sectional design, drawing data from the cancer registry at TASH's, Radiotherapy center.

Study Area:

The study was conducted at the Department of oncology,TASH**(**Tikur Anbessa Specialized Hospital**)** in Addis Ababa, Ethiopia.

Sources of Data:

Data for this study were collected from patient charts and logbooks.

Source Population:

The source population consisted of all prostate cancer patients listed in the cancer registry at TASH's Radiotherapy Center.

Study Population:

The study population included all prostate cancer patients registered at the Radiotherapy center between 2016 and 2020 .

Inclusion and Exclusion Criteria's

The inclusion criteria for this study were as follows:

- prostate cancer patients diagnosed base on PSA levels, biopsy results, and imaging
- Patients registered in the cancer registry at TASH's radiotherapy center during study period.
- Availability of medical records for data abstraction.

Exclusion criteria:

Patients with prostate cancer with history of cancer of other primary sites were excluded in this study.

Study Variables

- Baseline Characteristics of participants**(** eg Age of patient at diagnosis, Region, Place of residency, Medical Co-morbid Status**)**.
- Main Presenting complaints at diagnosis.
- Imaging Test used for diagnosis and staging.
- Total Serum PSA level at diagnosis.
- TNM and Group stage at diagnosis.
- ECOG Performance status.
- Gleason score
- Treatment pattern delivered **(** Type, number , quality, Time for first treatment **)**

Data extraction procedure

All patients Charts that fulfill inclusion criteria were reviewed. MRN and names of Prostate cancer Patient registered from January 2016 to January 2020 were identified from logbooks, and available Charts were collected from Card room. All charts were reviewed, and additional information was sought from treatment sheet and Electronic medical records of respective patient. All pertaining data were recorded and retrieved for all participants using "Data collection tool "prepared for purpose of this study **(**Annex- 1 **)**. Data collection team **(**Data collector and chart finders**)** were trained by principal investigator about the purpose of the study and data extraction techniques, and checklist filled was collected and checked for completeness by the principal investigator in daily basis. Pertaining data recorded and retrieved during data collection were inserted in SPSS for analysis.

Operational definition and measurements

- Date of diagnosis, Patient age, Main Presenting Complaint, and Radiological diagnostic tests used for of diagnosis and staging.
- Total blood prostate-specific antigen (PSA)) levels at the time of diagnosis; were grouped into five categories: (< 4 ng/mL, 4.01–10 ng/mL, 10.01–20 ng/mL, 20.01–100 ng/mL,, and > 100 ng/Ml.)
- ECOG performance status and The modified Gleason score proposed by the International Society of Urological Pathology was used to define five prognostic groups, namely (Grade Group 1 (Gleason score ≤ 6); Grade Group 2 (Gleason score 3 + 4 = 7); Grade Group 3 (Gleason score 4 + 3 = 7); Grade Group 4 (Gleason score 4 + 4 = 8; 3 + 5 = 8; 5 + 3 = 8); and Grade Group 5 (Gleason scores 9–10).
- Type of treatment (Radiotherapy, prostatectomy, androgen deprivation therapy, received) and
- Time from diagnosis to treatment(in days)

Statistical Analysis

Baseline Patient characteristics were described as mean ± standard deviation for quantitative variables, and number (percentage) for qualitative variables. Patients were classified into age groups to enable analysis of variations in clinical characteristics according to age. Our plan to classify in to prognostic and risk level was unfulfilled due to shortage of cases with required data for classification (TNM stage and Gleason score). Therefore, patients were re classified broadly based on status of distant metastasis (with distant metastasis (M1) and non-distant metastasis (M0)). All analyses performed using SPSS version 25.

Results

1. Baseline Characteristics

Baseline Characteristics: A total of 131 prostate cancer patients' were diagnosed and registered within the study period.After excluding 11 cases due to lost cards,the final analysis included 120 patients. The baseline characteristics of the study population are summarized in Table 1. The mean age at diagnosis was 67.75 ± 9.8years,with a range of 40-90years.Approximately 79 (65.9 %) patients were aged 65 and above. 60 (50%) patients resided in Addis Abeba, and 74 (61.7 %) patients lived in urban areas. Arround 39

(32.5 %) patients had at least one medical comorbidity,with hypertension in 30(31.9 %) patients, diabetic mellitus in 20(21.3 %) patients, and Retro viral infection(RVI) in four patients. Please refer to table 1 for a comprehensive overview of the base line characteristics of the study population.

		Number	Percent(%)
Age Category	Less Than 43	8	6.6%
	Between 45 and 55	12	10%
	Between 55 to 65	21	17.5%
	Between 65 and 74	44	36.7%
	75 and Greater	35	29.2%
Region	Amhara	13	10.8%
	Tigray	1	0.8%
	Oromia	34	28.3%
	SNNP	11	9.2%
	Afar	1	0.8%
	Addis Abeba	60	50.0%
Presence of Co-morbid illness	Single(One)	27	22.5%
	Two	12	10.0%
	Unknown	26	21.7%
	No	64	53.3%
Hypertension	Yes	30	25.0%
	Unknown	26	21.7%
	No	74	61.7%
Diabetes Melitus	Yes	20	16.7%
	Unknown	26	21.7%
	No	90	75.0%
Others comorbidity(HIV)	Yes	4	3.3%
	Unknown	26	21.7%
	No	79	65.8%
Family History Of Prostate Cancer	Yes	12	10.0%
	Unknown	29	24.2%
	No	80	66.7%
History of Cigarate Smoking	Yes	18	15.0%
	Unknown	22	18.3%
	No	82	68.3%
History of Drinking Alcohol	Yes	15	12.5%
	Unknown	23	19.2%

Table 1 Baseline Characteristics of Prostate Cancer patients registered from 2016 to 2020 in TASH (n=120)

Clinical Presentation of Study Population.

The clinical presentation of the study population was analyzed, and the findings are as follows:Out of the total patients,119 **(**99.2%**)** were symptomatic at diagnosis.Among these symptomatic patients, 58 individuals**(**48.4 % **)** presented with bladder outlet obstruction,while 45 patients **(**37,4%**)** reported experiencing pain. The site of pain varied,with 36 patients **(**30 %**)** reporting back Pain, 7 patients**(**5.8%**)** reporting pelvic Pain,1 patient **(**0.8**)** reporting abdominal Pain, and 1 patient**(** 0.8%**)** reporting lower extremities Pain. Please refer to Table 2 for a detailed breakdown of the Clinical Presentation of the study population.

		Number	Percent %
Main Presenting Complaint	Back Pain	36	30.0%
	Blader Outlet Obstruction	56	46.7%
	Lower Extremities Weakness	15	12.5%
	Pelvic Pain	7	5.8%
	Hematuria	2	1.7%
	Limping	1	0.8%
	Incidental Finding	1	0.8%
	Abdominal Pain	1	0.8%

Table 2 Clinical presentation for Prostate Cancer in TASH **(**n=120**)**

Base of Diagnosis and Staging Work up.

The bases of diagnosis and staging work up for the study population was analyzed, and the following findings were observed: The diagnosis of prosthetic cancer was based on biopsy or biochemical analysis of serum PSA**(**prosthetic-specific antigen**)**. Total PSA levels were available for 114 patients**(** 95%**)**, while biopsy results were available in 71 patients**(**59.2%**)**.

Radiological tests were conducted for all patients,with 92 patients**(**76.7%**)** undergoing two or more imaging modalities . The imaging modalities used for diagnosis and staging included chest x-ray **(**CXR**)** for 58 patients**(**48.3 %**)**, abdominal-pelvic ultrasound for 73 patients**(**60.8%**)**, CT Scan for 68 patients **(**56.7 %**)**, and MRI for 57 patients **(**47.5 %**)** . Detailed information on the imaging tests and staging can be found in Table 3. Vertebral or/and abdominopelvic CT and /or MRI were used for staging and diagnosis in 107 patients**(**89.2%**)** ,while both Vertebral and abdominopelvic CT and /or MRI were used in 25 patients**(**23.4 %**)** . Chest X ray and/or abdominal Ultrasound were used for staging and diagnosis in 11 patients **(**9.2 %**)**.

The T stage (extent of primary tumor) was not documented in 113 patients (94.2 %), and the N stage (involvement of regional lymph nodes) was not documented in 96 patients(80.0 %).

Distant metastasis was observed in 86 patients (71.7 %) of the study population. Bone involvement was presented in all patients, while lung involvement was found in 13 patients (10.8 %), and other sites of metastasis were observed in 10 patients (8.3%). Detailed information on the imaging tests and staging can be found in Table 3.

		Number	Percent %
Number Of Radiological Tests Performed	Single	28	23.3%
	Two	44	36.7%
	Three and More	48	40.0%
chest x-ray (CXR)	Unavailable	62	51.7%
	Available	58	48.3%
Abdominal-pelvic Ultrasound	Unavailable	47	39.2%
	Available	73	60.8%
MRI	None	63	52.5%
	Vertebral	43	35.8%
	Abdominopelvic	12	10.0%
	Both AP and V	1	0.8%
	Brain	1	0.8%
CT Scan	None	52	43.3%
	Vertebral	8	6.7%
	Abdominopelvic	49	40.8%
	Both AP and V	8	6.7%
	Brain	0	0.0%
	Chest	3	2.5%
PET/Bone Scan	PET	3	75.0%
	Bone Scan	1	25.0%
TNM (T) stage of disease	T1	1	0.8%
	T-2	1	0.8%
	T-3	3	2.5%
	T-4	2	1.7%
	TX	113	94.2%
TNM (N) stage of disease	N0	8	6.7%
	N1	13	10.8%
	N2	3	2.5%
	Nx	96	80.0%
TNM (M) stage of disease	M1	86	71.7%
	M0	34	28.3%
Site of Metastasis	Bone (either vertebral or pelvic)	86	71.7.0%
	Lung	13	10.8 %
	Others	10	8.3%

Table 3 - imaging tests staging of study population

Histopathology and Prognostic factors-

The research findings indicate that the median PSA level at diagnosis was 100 ng/mL, with a range of 0.9–3390 ng/mL. Additionally, it was found that **(**45 patients**(**37.5%**)** had a PSA level greater than 100ng/ml. Biopsy result showed that all patients had Adenocarcinoma, with 74 **(**61.7 %**)** patients having biopsy sample available. The Gleason Score was documented in 47.5% of patients, while ECOG Performance was documented in 103**(** 85.8 %**)** patients. These findings are summarized in Table 4,which provides an overview of histopathology, PSA level , ECOG Performance, and Gleason Score of the study population.

Gleason Score Grade	Group 1 **(**Score<6**)**	15	12.5%
	Group 2 **(** Score 3+4**)**	4	3.3%
	Group 3 **(** 4+3**)**	3	2.5%
	Group 4 **(**4+4**)**	15	12.5%
	Group 5 **(** 9-10**)**	20	16.7%
ECOG Performance Status	1	66	55.0%
	3	17	14.2%
	4	1	0.8%
	5	0	0.0%
	Missing/Unknown	17	14.2%
Histopathological types	Adinocarcinoma/	68	56.7%
	Acinal Cell	3	2.5%
	Not done/ no biopsy	49	40.8%
Serum PSA level Category	<4ng/ml	9	7.5%
	4.01-10ng/m	6	5.0%
	10.01-20ng/m	12	10.0%
	20.01-100ng/m	42	35.0%
	>100ng/m	45	37.5%
	Unavailable	6	5.0%

Table 4 –Histopathology, Level of PSA, ECOG Performance Status and Gleason Score of Prostate Cancer in TASH **(**n=120**)**

Pattern and Indication for Treatment

All patients in the study received at least one-treatment modalities,with 72 **(**62.3 % of patients**)** undergoing two and more modalities. The treatment modalities used included ADT **(**Androgen deprivation therapy**)** in 60.8% of patients, external beam radiotherapy in 69 patients **(**57.5%**)**, and surgery in 51 patients **(**42.5%**)**. Table 5 provides detailed information on the pattern and Indication for treatment within the study

population. ADT was the most frequently used treatment modality, with anti-androgen medications (goseralin and or /bicalutamide) being administered to 38 (34.9%) patients, Orchiectomy to 36 patients(33.0%), and a combination of ADT in 35(32.1 %) patients. Additionally,6(5%) patients received Chemotherapy upon progression on ADT.

Palliative radiotherapy was performed in 66 (55%) patients, with bone pain being the primary indication in 58 patients(48.3 %) and Cord Compression 5(4.1%) patients. Among those with bone pain (non-vertebral metastasis), 40% were treated with 20Gy in 5 fractions, while 60 % were treated with 8Gy in a single fraction . Back Pain (non-compressive vertebral met,40 % received 30 Gy in 10 fractions, 40 % received 20Gy in 5 fractions, and 20% received 8Gy in single fraction. For Cord Compression, 5 patients (4.1 %) were treated with 20Gy in 5 fractions, while brain metastasis in 1 patient was treated with the same dosage. Furthermore, for homeostatic, 30Gy in 10 fractions was administered. Only 3 Patients were deemed suitable for curative radiotherapy. The mean time for treatment was 21.8±36.6 days (range1-270 days), with 102 patients (85 %) receiving treatment within one month of diagnosis.

		Number	Percent
Waiting Time Category	Within One Month Of Diagnosis	102	85.0%
	For More Than one month	15	12.5%
	Waiting or Unknown	3	2.5%
Treatment pattern	None	0	0.0%
	Single Modality	22	18.3%
	Two Modalities	51	42.2%
	Three modalities	35	29.2%
	Four Modalities	12	28.7%
Chemotherapy Status	NO	114	95.0%
	Yes	6	5.0%
Bone Modifing Agent	Yes	108	90.0%
	No	12	10.0%
Surgery	None	69	57.5%
	Documented as Radical Prostatectomy	41	34.2%
	TUP for BPH	10	8.3%
Radiotherapy Status	No	51	42.5%
	Yes	69	57.5%
Indication for Radiotherapy	Palliative	66	95.7%
	Curative	1	1.4%
	Booked or Waiting	2	2.9%

Indication For Palliative Radiotherapy	Back Pain (non compressive)	23	19.2%
	Bone Pain (non vertebral met)	36	30.0%
	Cord Compression	5	4.1 %
	Brain Met and hemostatic each	1	1.5%
	Curative	1	0.83%
	Booked for Curative	2	1.7%
	Hemostatic	1	1.5%
Androgen Deprivation Therapy(Medical)	NO	47	39.2%
	Yes	73	60.8%
Androgen Deprivation Therapy(Orchedochtomy)	NO	50	41.7%
	Yes	70	58.3%
Androgen Deprivation Therapy	Medical Alone	38	34.9%
	Surgical Alone	36	33.0%
	Both	35	32.1%
Indication for Orchidectomy	localized sensitive	30	42.9%
	localized castration resistant	0	0.0%
	Metastatic Castartion Sensitive	34	48.6%
	Metastatic Castartion Resistant	6	8.6%
Indication for Medical ADT	localized sensitive	23	20.9%
	localized castration resistant	12	10.9%
	Metastatic Castartion Sensitive	58	52.7%
	Metastatic Castartion Resistant	17	15.5%

Table 5 Pattern and Indication for treatment for Prostate Cancer in TASH (n=120)

Discussion

We found that the mean age at diagnosis of the participants was 67.75 years, and except Ghanaian report (65-65.4 years), our finding is more closely similar to mean age (66.6 to 71.5 years) of prostate cancer patients in all sub-Saharan African countries (SSA) (49,51). The lower age in this Ghanaian report can be explained by a selection bias because these patients were referred to the National Radiotherapy center for a potentially curative treatment option suggesting a younger age (51). The older age at diagnosis found in this study and other African countries suggests that either prostate cancer was more likely to affect older men or it was due to the lack of cancer screening and awareness of prostate cancer and its symptoms among Ethiopian or African men.

This lack of awareness and screening among Ethiopian men is reflected in the stage at which patients presented at diagnosis, as most patients (71.7 %) in our study present at advanced distant metastatic stage.

Moreover, prostate cancer patients in Ethiopia were symptomatic at presentation, and most patients seek help only when they experienced emergency condition mainly bladder outlet obstruction **(**48.4 %**)**. Although no study yet in Ethiopia that asses' level of awareness and screening of prostate cancer among men in Ethiopia, study from neibour- hood country, Kenya, reported lack of awareness about prostate cancer **(**84%**)** and screening **(**40.6%**) (**50**)**.

In addition, among developed countries where prostate cancer screening is not routinely performed, advanced presentation of prostate cancer **(** in terms of age, symptoms and stage at diagnosis**)** was similar with countries from SSA. One study In Denmark where prostate cancer screening is not routinely performed higher rate of distant metastasis **(**32%**)** was reported compared 10% in other developed countries with screening program **(**49**)**.

Suggesting the role of absence of screening program for advanced stage presentation of prostate cancer. This advanced presentation of prostate cancer patient in Ethiopia is reflected in the level of PSA, which patients presented at diagnosis in our study, as majority of them had high PSA level at diagnosis, and for this reason qualify mostly for an intermediate or high-risk disease status. This is also the case in prostate cancer patients in other African countries **(**49, 51**)**, and is pertinent again to the fact that most men already had advanced disease. However, in our study, number of patients was not adequately staged and Gleason score was not documented in most patients to know the group to which has prognostic implication, which is also the case in other African Countries **(**49**)**.

Obstacles such as the absence or scarcity of tests used for early diagnosis and staging of prostate cancer in Ethiopia like multiparametric MRI and erratic functions of the trans-rectal ultrasound machine contributed for this. Another challenge that hampers the successful diagnosis and staging of patients with prostate cancer in Ethiopia was a suboptimal use of available imaging like MRI and CT and Biopsy, which is also the case in other African countries **(**49**)**.

In our study, commonest treatment option was hormonal treatment **(**ADT**)**, which is similar across other SSA countries **(**49.51**)**. This is understandable because of the advanced disease at diagnosis observed in the large majority of patients and scarcity of radiotherapy center in both Ethiopia and other African countries. Genarally for advanced stage like in our cases, Clinical trials have demonstrated the importance of this medication **(**Gonadotropin releasing hormone agonists and antagonists**)** as initial treatment, and combination with cytotoxic agent like docetaxel demonstrated significant survival improvement for prostate cancer patient whom progressed on any type of ADT**(**1**)**.

Most of the patients in this study presented with late presentations, and therefore, they end up having palliative radiation treatment, and similar to other African countries (49), radiation therapy as curative treatment option for prostate cancer was rare (3 patients) in our study.

Conclusion

Majority present with high PSA level and metastatic disease at presentation, and there was gap in diagnostic tests in terms of biopsy, GS and imaging modalities for diagnosis and staging. Screening for early diagnosis and improvement in staging work up needs improvement.

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