

# The Prevalence of Prostate Cancer in Sudan

Fahad A. Mohamed<sup>1</sup>, Abdoelrahman Hassan A. B<sup>2</sup>, M. E. M. Garelnabi<sup>3</sup>

<sup>1,2,3</sup>Sudan University of Science and Technology, College of Medical Radiologic Science,  
Crossing Elguish St. and Elshahid Elzabier St. Former Elbaldia Street, Khartoum, Sudan

**Abstract:** *The incidence of prostate cancer in the Sudan becomes the most public type among the Sudanese men. This study conducted to investigate the relationship between the age, region, and patient parent's relative and marital status in patients with histological proven prostatic cancer. A cross-sectional intended to investigate the prevalence of prostate cancer in this region. The sample magnitude was 1177 patients with age ranged between 25-109 years divided to six age groups, Sudan was divided geography to ten regions and one for foreigners. The study found that 661 (56%) of the 1177 patients had age group range from 65 to 79 years, the common states whose had a high incidence of prostate cancer were Khartoum 226 (19%), Kordofan 194 (17%), Darfur 157 (13.3%) and Northern 148 (13%) respectively. in addition to the results enumeration for this study which deals with the Frequency of marital status among prostatic cancer patients found 1160 (98.5%) were a married and also deals the frequency of patient parents relative found 1096 (93%) of the 1177 patients had relation from first and second generation. finally the study found from all total patients (1177) that 329 (28%) came to Radiation Isotopes Center of Khartoum (RICK) during 2010, 404 (34%) and 444 (38%) during 2011 and 2012 respectively. Older patients are more likely to have high-risk prostate cancer many researchers have reported a link between age and race with prostate cancer. Those agree with my study found the incidence increase with age more than 65 years and in Arabized men according to main region state if excluded Khartoum.*

**Keywords:** prostate, radiation therapy, cancer, Sudan

## 1. Introduction

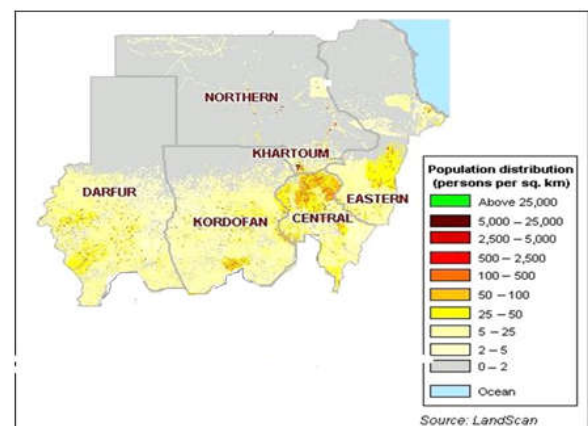
Prostate cancer considers one of the furthermost tumor in world; it classify second among all cancers in both genders after breast in 2012 [1]. It likewise the most public type among the Sudanese men [2]. In people with prostate cancer, the bone is usually the primary distant place of metastasis. More than two-third of secondary prostate carcinomas metastasize to the bones [3].

Sudan is a country located in Africa. It is the third biggest country in Africa. Its capital is Khartoum. the Sudan bounded from north by Egypt, from east by the Red Sea, Ethiopia and Eritrea, from south by South Sudan, from southwest by the Central African Republic, from west by Chad and from northwest by Libya [4]. The Islam is current religion [5].

The current population of Sudan about forty one million [6]. The Arab presence is estimated about 70% of the Sudanese population [7]. Others include the Arabized ethnic groups of Northern Nubians, Nuba, Zaghawa, Fur, Borgo, Masalit, Copts, Fulani, Beja, Fallata and Baggara, all that tribes concentrated in Northern state, kordofan, darfur and western states [8 and 9]. the Sudan has eighteen states, Khartoum, al jazeera, white Nile, Red sea, kassala, Al Qadarif, Sennar, damazin, northern, River Nile, kordofan (North Kurdufan, South Kurdufan and West Kurdufan) darfur (Central Darfur, East Darfur, North Darfur, South Darfur and West Darfur). [10].

Prostate Cancer has Common Risk Factors like Age, Race (ethnicity), Geography, Family history and Gene Changes. in addition that there are Factors with less clear effect on prostate cancer risk such as Diet, Obesity, Smoking, Chemical exposures, Inflammation of prostate, Sexually transmitted infection and Vasectomy [13].

The first common Risk Factor is the Age, The incidence of prostate cancer increases with age. Around one in ten thousand males under age 40 will be diagnosed with prostate cancer; one in fifteen males in their 60s will be reported with the disease [14].



**Figure 1** Sudanese map showed the population density by states [10]

The second Risk Factor is the Race, Black men in America Ranked the highest incidence rate of prostate cancer in the world — 180.6 per 100,000 population [15]. Between 1996 and 2000 in the United States, the age-adjusted death rate of prostate cancer among black men (73.0 per 100,000 population) was more than double that of non-Hispanic white men (30.2 per 100,000 population) [16, 17]. Family history is also a significant risk factor for prostate cancer, there are some genes have related to prostate incidence, for example The ELAC2 protein is a zinc phosphodiesterase, a condition associated with familial cancer of the prostate. [18]

The diet is the one of the clearest characteristics of the Western diet is a high intake of total calories and fat. There

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are many studies correlation between per capita fat consumption across countries and the rate of prostate cancer mortality. These interconnection were strongest for saturated fat, which is largely fat from animal sources. [19]

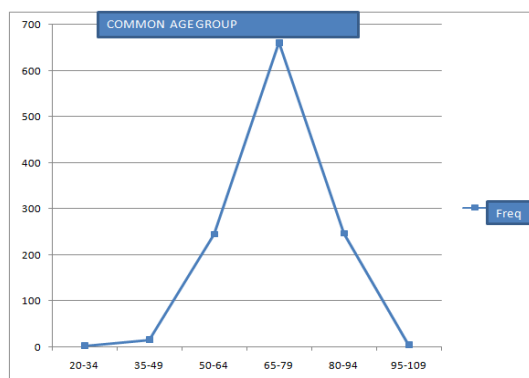
## 2. Material and Method

This study is a Retrospective study, which was performed in amongst the cancer patients in Sudan. The sample magnitude was 1177 patients with prostate cancer. The patients' age ranged between 45-95 years old. The study data was retrieved from patients' files system of Radiation and Isotopes Center of Khartoum (RICK), To avoid bias in temporal trends, the analysis was took all patients came and registered in statistic office of RICK from 2010 to 2013.

## 3. Results

**Table [1]** shows the frequency distribution of the age group involved with Prostate cancer From January 2010 to December 2012 in RICK (Sudan).

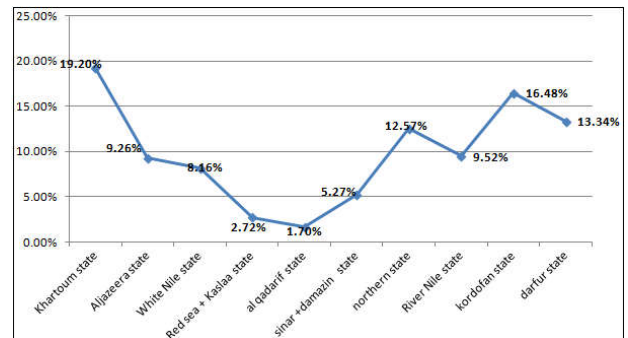
Age group	frequency	%
20-34	3	0.26%
35-49	16	1.36%
50-64	245	20.82%
65-79	661	56.16%
80-94	247	21.00%
95-109	5	0.40%
Total	1177	100%



**Figure 2:** Line graph show the common age group

**Table (2)** demonstrate the frequency distribution of the prostate cancer incidence according to region.

State of Sudan	Frequency	Percentage %
Khartoum	226	19.20
Aljazeera	109	9.26
White Nile	96	8.16
Red sea + Kaslaa	32	2.72
Al qadarif	20	1.70
Sinar +Damazin	62	5.27
Northern	148	12.57
River Nile	112	9.52
Kordofan	194	16.48
Darfur	157	13.34
Other	21	1.78
Total	1177	100



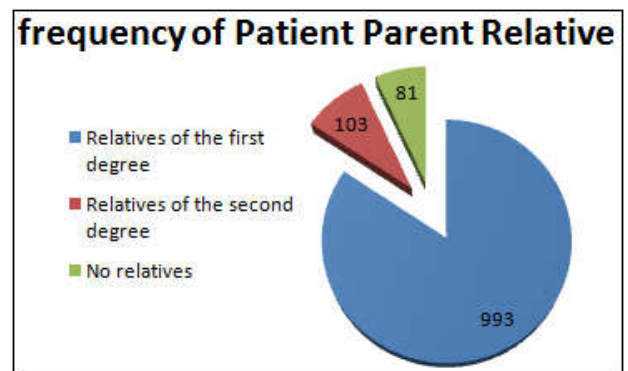
**Figure 3:** Line graph show the distribution of patient among state of Sudan.

Table (3) shows the frequency distribution of the marital status Group involved with Prostate cancer From January 2010 to December 2012 in RICK.

Marital status	Frequency	Percentage
Married	1160	98.5%
Single	17	1.5%
Total	1177	100%

**Table (4)** Showed the frequency distribution of the family history of prostate cancer

Patient parents relative	Frequency	%
Relatives of the first degree	993	84.37
Relatives of the second degree	103	8.75
No relatives	81	6.88



**Figure 4:** Pie graph show the frequency of patient parents relative.

**Table (5)** shows the frequency % of Incidence of Prostate cancer From January 2010 to December 2012 in RICK.

Years	Frequency
2010	329
2011	404
2012	444

## 4. Discussion

Prostate cancer incidence rates have leveled off in men aged 65 and order. [21] that mach with my study. This study was conducted to relate between age and prostate cancer, found the common age from 65 to 80 years, more than that age (80 years) the probability of incidence of prostate has decrease. A study by the Defense Center for Prostate Disease Research indicated that the percentage of men older than 65 years diagnosed with prostate cancer decreased from 53% in 1990

to 27.8% in 1996 and remained stable thereafter [22]. Probably as a result of improved screening and diagnosis. Although that here in Sudan the incidence of prostate cancer increase yearly, this study conducted to 329 patients with prostate cancer (28%) came to treat in Radiation Isotopes Center of Khartoum (RICK) during 2010, 404 patients (34%) and 444 patients (38%) during 2011 and 2012 respectively.

These results are in line with earlier findings on the outcomes of prostate cancer patients depending on family history race that found about 93% the patients had parent relative from first and second generation that increase the probability to link between the family history and specific race.

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