Scientific Research Publishing

Journal of Cancer Therapy, 2024, 15, 239-249
https://www.scirp.org/journal/jct
ISSN Online: 2151-1942
ISSN Print: 2151-1934

Epidemiological and Histopathological Profile of Prostate Cancer: A Retrospective Study in the Pathology Department of the University Clinics of Kinshasa

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How to cite this paper: Buanza, R.L., Lukuke, J.O., Lolangwa, F.B., Muela, A.M., Nkumu, M.L., Kabongo, F.B., Sitamuina, R.K. and Kabongo, J.-M.M. (2024) Epidemiological and Histopathological Profile of Prostate Cancer: A Retrospective Study in the Pathology Department of the University Clinics of Kinshasa. *Journal of Cancer Therapy*, **15**, 239-249.
https://doi.org/10.4236/jct.2024.156023

Received: March 24, 2024
Accepted: June 11, 2024
Published: June 14, 2024

Abstract

Background: Prostate cancer, the most common male cancer, represents a real public health problem in terms of its frequency and severity in different countries around the world. It disproportionately affects people of African descent wherever they live in the world [1]. To the best of our knowledge, its extent and particularities in the African environment are not well known. **Objective:** To determine the epidemiological and histopathological profile of prostate cancer in the CUK anatomopathology department. **Methodology:** This is a retrospective study conducted at the University Clinics of Kinshasa Anapathology Department from January 1, 2015 to December 31, 2022, a period of 8 years. Word processing and tables were entered using the Hp brand computer, with Microsoft Office WORD 2016 software. Data analysis was performed with SPSS version 22.0 software. Results were presented in tables and figures. **Results:** Prostate was diagnosed in 132 cases, *i.e.* 1.58% of all CUK laboratory analyses and 8% of cancers diagnosed. The age group most affected was 66-75 years, *i.e.* 59% of all subjects. Adenocarcinoma was the most frequent histological type, and biopsy dominated in 111 cases (84.1%). **Conclusion:** Prostate cancer is a real public health problem. Worldwide, and in the Democratic Republic of Congo, it is the most frequently diagnosed cancer in men, and the leading cause of cancer-related death in men. In the DRC, because of the delay in consulting our patients and the weakness of

systematic screening, patients are seen at an advanced stage of the disease. Treatment is multidisciplinary, involving surgery, radiotherapy and chemotherapy (including targeted therapies). Patient awareness and screening campaigns will help to considerably reduce the delay in diagnosis and the morbidity and mortality associated with prostate cancer.

Keywords

Prostate, Gleason Score, Democratic Republic of Congo

1. Introduction

Prostate cancer (PCa), the most common male cancer, represents a real public health problem in terms of its frequency and severity in different countries around the world. It disproportionately affects people of African descent wherever they live in the world [1].

Its incidence is generally characterized by a variability ranging from 1 to 30/100,000 inhabitants, depending on the geographical and/or ethnic characteristics of the populations.

This disparity implies the multiple interaction of environmental and genetic factors in its genesis. It is currently accepted that the African group as a whole is most at risk of developing (PCa).

According to GLOBOCAN 2022 estimates, prostate cancer is second only to bronchopulmonary cancer (14.2%) in the top 5 most common cancers in men [2]. And in both sexes, it ranks 4th after colorectal cancer, which ranks 3rd at 7.3%. The lowest incidences were recorded in Asian populations, and the highest in Northern Europe. Very high incidences are observed in Oceania and North America, mainly in the USA and Canada, where they are among the highest in the world [3] [4].

In Africa, the overall incidence of (PCa) was 26.8 per 100,000 inhabitants. It varied considerably between the North and South of the Sahara (**Table 1** see book). The incidence of this disease was 10.6 per 100,000 inhabitants in North Africa after lung cancer, and 27.9 per 100,000 inhabitants in Sub-Saharan Africa before liver cancer. In sub-Saharan Africa, incidences were 67.9 in the SAR, 34.7 in Guinea, 31.1 in the DRC, 37.4 in the Republic of Congo, 27.2 in Sierra Leone and 25.0 per 100,000 inhabitants in Angola [5] [6].

Moreover, in the Democratic Republic of Congo, the absence of a national cancer registry is a serious handicap to the real epidemioclinical evaluation of prostate cancer (**Figure 1**, **Figure 2** and **Table 2**).

Nevertheless, some studies have been carried out, among those of Kambere's [7] on Epidemiological profile and histologic based outcome of prostatic cancer in Congolese patient following Gleason's classification, Ngandu on PCa prevalence in Mbujimayi [8], PCa risk factors [9], PSA value in PCa diagnosis [10], PCa histopronostic caracteristiques [11]

Table 1. Estimated incidence rates of prostate cancer ($\times 10^5$ pa) in different regions of the world.

Regions of the world	Incidence
Afrique sub-saharienne	27.9
Afrique du Nord	10.6
Afrique du Sud	61.8
Amérique du Nord	97.2
Amérique Centrale	28.4
Amérique du Sud	60.1
Caraïbe	79.8
Asie de l'Est	10.5
Asie du Sud-Est	11.2
Asie de l'Ouest	28.0
Europe Centrale de l'Est	31.3
Europe du Nord	85.0
Europe du Sud	58.6
Europe de l'Ouest	94.9
Océanie	101.9

Source: GLOBOCAN 2012.

Table 2. Histological nature.

Diagnosis	**n = 132**	**%**
Adenocarcinoma	122	92.4%
Squamous cell carcinoma	10	7.6%

2. Method

2.1. Type, Setting and Period of Study

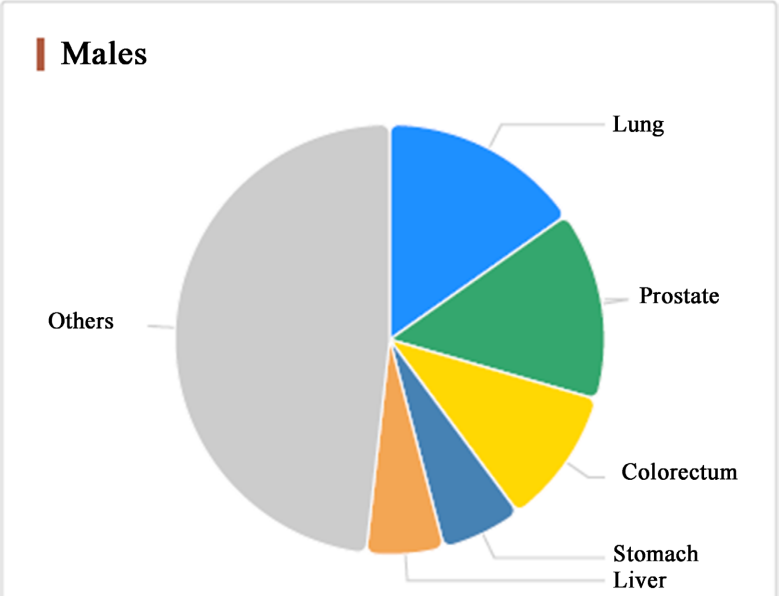
This is a retrospective study carried out in the Pathological Anatomy Laboratory of the University Clinics of Kinshasa. The present study took place in the Department of Pathological Anatomy of the University Clinics of Kinshasa. Duration: January1, 2015 to December 31, 2022.

2.2. Study Population

Our sampling being of convenience, we had to consider all the patients listed during the period of the study, in whom the diagnoses of prostate cancers was confirmed after rereading and met the inclusion criteria retained.

2.3. Case Inclusion Criteria

All prostate biopsy blocks and slides, resection specimens, adenectomies and



Rank	Cancer site	Number of cases	Percent
1st	Lung	1572045	15.2%
2nd	Prostate	1467854	14.2%
3rd	Colorectum	1069446	10.4%
4th	Stomach	627458	6.1%
5th	Liver	600458	5.8%
-	Others	4974131	48.2%

Number of new cases in 2022, males, all ages

Source: GLOBOCAN 2022.

Figure 1. Top 5 common cancers in men.

radical prostatectomies.

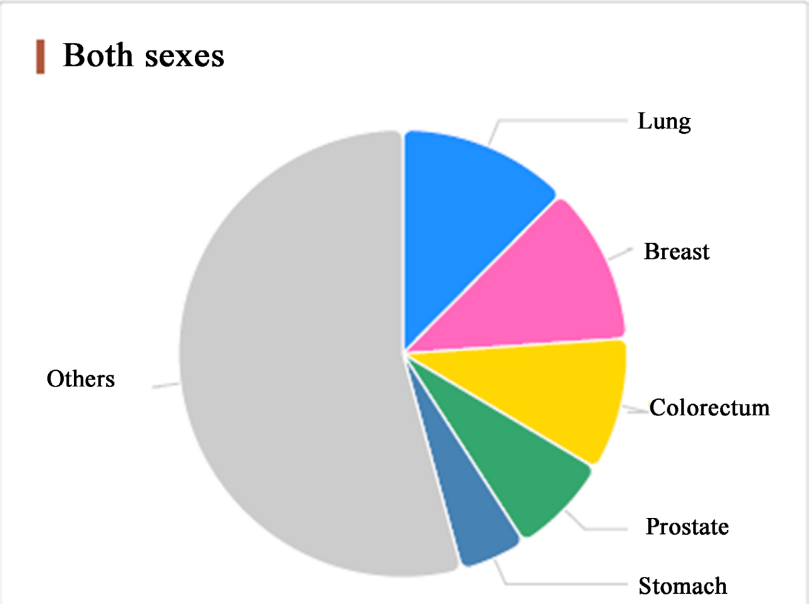
2.4. Histological Examination Procedure

All specimens were fixed in 10% formalin, dehydrated and cleared, embedded in kerosene, microtomed at 3 - 5 microns and stained with hematoxylin and eosin.

Slides were reread using an OLYMPUS BX41 co-observation microscope. The final diagnosis of prostate cancer was made after all slides had been reread by two Pathologists as independent readers. In the event of discrepancies in the results, the third Pathologist was called in.

2.5. Statistical Analysis

Statistical analysis was carried out in two stages.



Rank	Cancer site	Number of cases	Percent
1st	Lung	2480675	12.4%
2nd	Breast	2296840	11.5%
3rd	Colorectum	1926425	9.6%
4th	Prostate	1467854	7.3%
5th	Stomach	968784	4.8%
-	Others	10835921	54.2%

Number of new cases in 2022, both sexes, all ages

Source: GLOBOCAN 2022.

Figure 2. Top 5 common cancers in both sexes.

- Univariate analysis: Categorical (qualitative) variables were summarized by frequency tables or graphs and percentages. In addition, quantitative variables were described in terms of medians or means, depending on whether the distribution is non-symmetrical or symmetrical.

- Bivariate analysis: The search for a correlation or relationship between the various qualitative parameters was carried out using Pearson's Chi-square test or Fisher Exact when one of the observed frequencies is less than 5, which consists in calculating the correlation coefficient P. The significance threshold was set at 5%: the test is significant if $P \leq 0.05$.

Data were coded and processed using Excel software.

Analysis was performed using SPSS version 20 software.

2.6. Ethical Considerations

Confidentiality and anonymity were respected.

3. Results

Frequency of prostate cancer on all analyzes in the pathological anatomy laboratory.

The figure shows that (PCa) accounts for 1.58% of all analyses carried out in the CUK Anapath laboratory (Figure 3).

PROSTATE CANCER FREQUENCY IN ALL CANCERS (Figure 4)

AGE OF SUBJECTS WITH PROSTATE CANCER

This Figure 5 shows that the 66-75 age group predominates, with 59% of all subjects.

HISTOLOGICAL TYPES

This table shows that Adenocarcinoma predominates with 87.8% (Table 2).

Type of sample

In our study, as shown in the table, biopsy dominated in 111 cases (84.1%) (Table 3 and Table 4).

DISTRIBUTION OF PATHOLOGIES OBSERVED IN THE PROSTATE

The table shows that non-cancerous lesions account for 51.3% of all pathologies observed.

DISTRIBUTION OF NON-CANCEROUS LESIONS IN THE PROSTATE

GLEASON SCORE (Figure 6)

63.8% of prostate cancers are high-risk (Table 5).

ISUP CLASSIFICATION

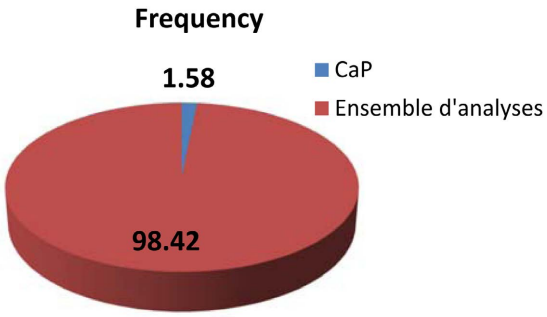


Figure 3. Frequency of prostate cancer among all laboratory tests.

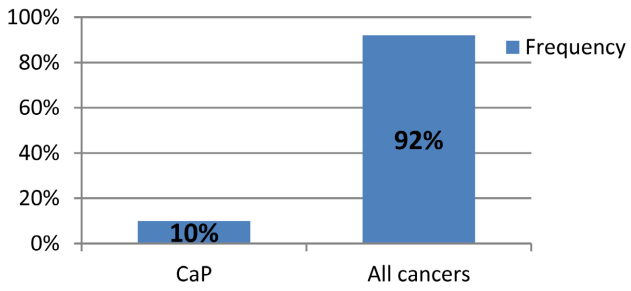


Figure 4. Frequency of prostate cancer among all cancers.

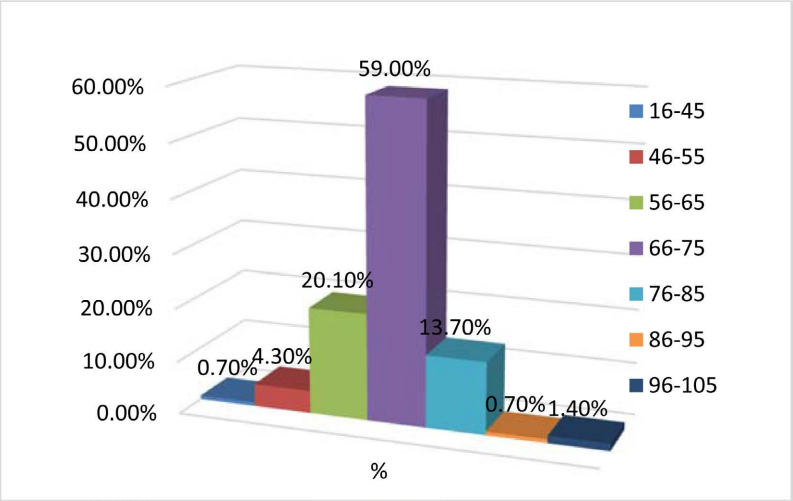


Figure 5. Age of subjects with prostate cancer.

Table 3. Type of sample

Nature	n = 132	%
Prostatic adenomectomy specimen	9	6.8%
Prostate biopsies	111	84.1%
RTUP chips	10	7.6%
Radical prostatectomy specimen	2	1.5

Table 4. Distribution of pathologies observed in the prostate.

Diagnosis	*Number*	%
Prostate cancer	132	48.7%
Non-cancerous lesions	139	51.3%

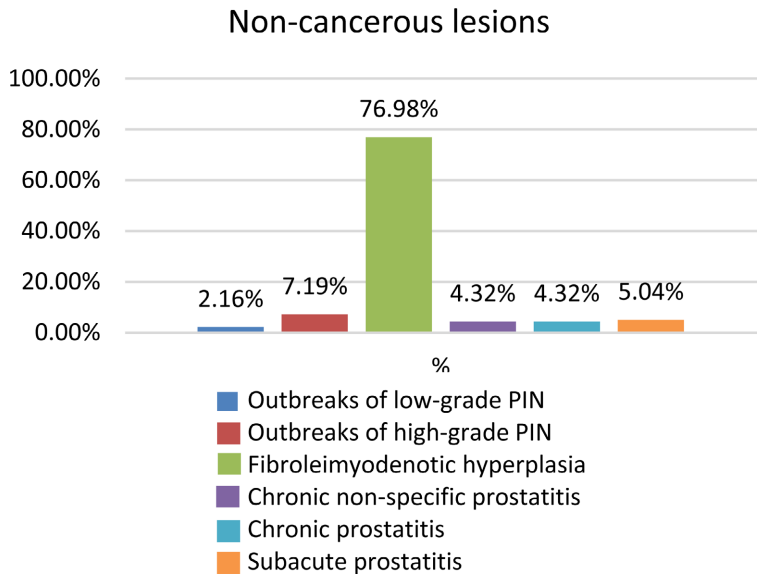


Figure 6. Distribution of non-cancerous lesions in the prostate.

Of the 132 cases of prostate cancer diagnosed, 35 patients were classified as ISUP 1, *i.e.* 27%, 6 patients were classified as ISUP 2 (3 + 4), *i.e.* 5%, 7 patients were classified as ISUP 2 (4 + 3), *i.e.* 5%, 40 patients were classified as ISUP 4, *i.e.* 30%, and 44 patients were classified as ISUP 5, *i.e.* 33% (Figure 7).

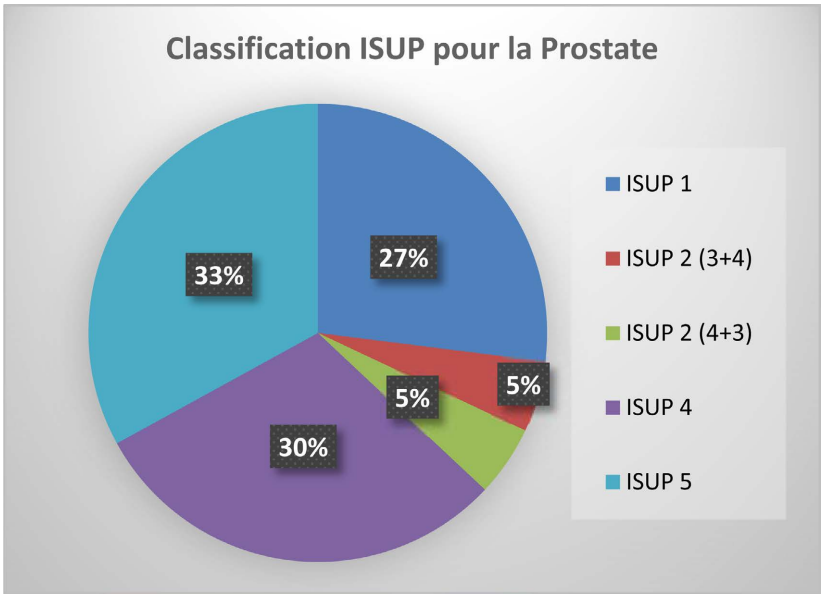


Figure 7. ISUP prostate classification.

4. Discussion

This was a retrospective study. In our series, the frequency of prostate cancer represented 1.8% (Figure 3) of all laboratory analyses during the period of our study, in contrast to the study conducted by Halidou M *et al.* in Niger, which revealed 3.4% [6].

This frequency differs from that of Kambere *et al.* who found a frequency of 0.12% [7], and also from that of Lomba DIMONGO who noted a frequency of 0.3% [12].

The somewhat reduced frequency may be explained by the population's poor access to diagnosis due to a lack of adequate screening systems, but also by awareness of the seriousness of this pathology and the value of early diagnosis at a stage when the cancer is potentially curable.

Biopsy was the most common type of sampling in 111 of the 132 cases (See Table 3, i.e. 84.1% and Table 4). This result is justified by the fact that an increase in PSA above 4 nano-grams/milliliter is an absolute indication for prostate biopsy, especially if accompanied by information about cancer on digital rectal examination. Although in our series we have little clinical information on PSA levels, the little we do have indicates that the PSA level was above 4 nano-grams/milliliter (Figure 7).

In this study, prostate cancer accounted for 8% of all cancers in the pathological anatomy department of the University Clinics of Kinshasa, while the GLOBOCCAN 2022 revelations show that prostate cancer accounted for 7.3%, a

result that is superimposed on the findings of the study by A. Ouatara *et al.* which revealed a frequency of 12% in Benin [13].

Studies show that frequencies are disproportionately high in different regions.

The age group most affected is 66 - 75. This trend had been more or less the same in most studies. Many authors confirm that, worldwide, prostate cancer remains the cancer of the elderly.

The age group most affected is 66 - 75 (See **Figure 5**). This trend has been more or less the same in most studies. Many authors confirm that, worldwide, prostate cancer remains the cancer of the elderly, such as NGANDU TJ *et al.* who state that the majority were aware of the seriousness of the cancer, and 92% that it affected older men [10].

Prostatic adenocarcinoma was the most common histological type, accounting for 92.4% (**Table 2**). This result is consistent with studies by various authors in most cases [11].

In our series, 63.8% (**Table 5**) of prostate cancers were high-risk, a higher trend than in the study by Halidou M [6].

Table 5. Distribution of high-risk prostate cancers (D'Amico classification).

Low risk (Gleason ≤ 6)	Intermediate risk (Gleason = 7)	High-risk (Gleason > 7)
35	13	84
Or 26.5%	Or 9.7%	Or 63.8%

In our series, histological findings according to ISUP group were as follows: ISUP 1 represented 27%, ISUP 2 10%, ISUP 4 30% and ISUP 5 33% of cases, a result which differs from that of Halidou M *et al.* [6], whose ISUP 1 was 2.70%, ISUP 2 24.32%, ISUP 4 43.24% and ISUP 5 10.83%. This would be justified by the fact that in our study the number of cases is approximately double the number of cancers diagnosed in the Halidou M *et al.* series, *i.e.* 132 cases in our study and 74 cases for Halidou M *et al.*

5. Conclusions

Prostate cancer is a real public health problem. Worldwide, and in the Democratic Republic of Congo, it is the most frequently diagnosed cancer in men, and the leading cause of cancer-related death in men. In the DRC, because of the delay in consulting our patients and the weakness of systematic screening, patients are seen at an advanced stage of the disease. Treatment is multidisciplinary, involving surgery, radiotherapy and chemotherapy (including targeted therapies). Patient awareness and screening campaigns will help to considerably reduce the delay in diagnosis and the morbidity and mortality associated with prostate cancer. Given the high incidence of prostate cancer in African countries in general, and in the Democratic Republic of Congo in particular, it is important for decision-makers to implement a prostate cancer screening program, with good coverage of the population of men at risk throughout the country, Equip health fa-

cilities with screening equipment and Pathological Anatomy Laboratories to ensure adequate care for men with precancerous and cancerous prostate lesions in the DRC. Use audiovisual programs to raise awareness of the potential importance of prostate cancer screening. Pathologists: Intensify meetings between Urologists and Pathologists to reinforce and update prostate cancer screening strategies.

To researchers, initiate a prospective multicenter study to establish the immunohistochemical profile of prostate cancers, in association with genotyping, and initiate a study to search for genetic mutations in prostate cancers, enabling targeted therapy.

Authors' Contributions

All authors declare that they have read and approved the final version of this manuscript.

Acknowledgements

We are grateful to the Oncology Department of Nganda Hospital for providing us with the information we needed to write this paper.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Punga-Maole, A.M., Moningo, D.M., Kayembe, P.K., Tshikuela, M.L. and Kabongo, J.M. (2008) Study of Prostate Cancer Screening in a Population of Employees of a Company in Kinshasa, Democratic Republic of Congo. Detection Rate and Nutritional and Geographical Risk Factors. *Progrès en Urologie*, **18**, 512-518. https://doi.org/10.1016/j.purol.2008.04.009

[2] International Agency for Research on Cancer, GLOBOCAN 2022. https://gco.iarc.who.int/media/globocan/factsheets/populations/900-world-fact-sheet.pdf

[3] Dimitri, M., Collins, P.W., Daniela Starmann, D., Savi, S., Claire Ross, C., Adams, M. and Marco Narducci, M. (2023) The World Foundation of Urology-C.F. 06477631003.

[4] Ferlay, J., Soerjomataram, I., Ervik, M., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., Parkin, D.M., Forman, D. and Bray, F. (2013) GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldide: IARC Cancer Base No.11. *International Journal of Cancer*, **5**, 359-386.

[5] Chu, L.W., Ritchey, J., Devesa, S.S., Quraishi, S.M., Zhang, H.M. and Hsing, A.W. (2011) Prostate Cancer Incidence Rates in Africa. *Prostate Cancer*, **2011**, Article ID 947870. https://doi.org/10.1155/2011/947870

[6] Halidou, M., Kodo, A., Diongolé, H., Zakou, A.R.H., Magagi, I. and Amadou, S. (2024) Le Cancer de la Prostate au Niger: Aspects Epidémiologiques Cliniques et Histologiques à l'Hôpital National de Zinder. *Health Sciences and Disease*, **23**.

[7] Kambere, S.R. and Kabongo, M.J.M. (2013) Epidemiological Profile and Histologic

Based Outcome of Prostatic Cancer in Congolese Patient Following Gleason's Classification.

[8] Ngandu, T.J., Punga, M.A., Kabongo, M.J.M., Lebwaze, M.B., Moningo, D. *et al.* (2015) Prévalence du cancer de la prostate a Mbujimayi en République Démocratique du Congo. *Revue Medicale des Grands Lacs*, **4**, 106-121. https://www.researchgate.net/publication/293654251_Prevalence_du_cancer_de_la_prostate_a_Mbujimayi_en_Republique_Democratique_du_Congo

[9] Ngandu, T.J., Punga, M.A., Kabongo, M.J.M., Lebwaze, M.B., Moningo, D. *et al.* (2015) Facteurs de risque de cancer de la prostate à Mbujimayi. *Revue Medicale des Grands Lacs*, **4**, 195-204. https://www.researchgate.net/publication/293452488_Facteurs_de_risque_de_cancer_de_la_prostate_a_Mbujimayi

[10] Ngandu, T.J., Punga, M.A., Kabongo, M.J.M., Lebwaze, M.B., Moningo, D. *et al.* (2015) PSA Value in Prostate Cancer Diagnosis.

[11] Ngandu, T.J., Punga, M.A., Kabongo, M.J.M., Lebwaze, M.B., Moningo, D. *et al.* (2015) Prostate Cancer Histopronostic Caracteristiques.

[12] Lomba, D.O. (2016) Profil Anatomoclinique du cancer de la prostate à l'IME-KIMPESE, Travail de fin d'études, Faculté de Médecine Humaine, Université Protestante de Kimpese, 2015-2016.

[13] Ouattara, A. (2012) Epidemiology of Utological Cancers at the Hubert Koutoukou Maga National University Hospital Cotonou, Benin. Review of about 158 Cases of Urologic Cancers. *Progrès en Urologie*, **22**, 261-265. https://doi.org/10.1016/j.purol.2011.12.003