

ANNUAL COST ESTIMATION OF PROSTATE CANCER MANAGEMENT IN AN ACADEMIC REFERRAL HOSPITAL IN SENEGAL.

ESTIMATION DU COÛT ANNUEL DE LA PRISE EN CHARGE DU CANCER DE LA PROSTATE DANS UN HÔPITAL UNIVERSITAIRE DE RÉFÉRENCE AU SÉNÉGAL.

JALLOH M, DIALLO TA, NDOYE M, MOUANZA J, MBODJI MM, DIALLO A, NIANG L, GUEYE SM.

Auteur correspondant: Dr Mohamed Jalloh, Service d'Urologie, Hopital Général Idrissa Pouye, BP : 3270, email : jmohamed60@yahoo.fr

RESUME :

Introduction : Prostate cancer incidence has a particularly high incidence in black male due to genetic predispositions. Men affected with prostate cancer are generally retired with limited financial resources. The aim of our study was to evaluate the cost of prostate cancer management in a tertiary hospital. **Methodology:** We conducted a descriptive study of the clinical and economic aspects of patients diagnosed with prostate cancer and managed at Hopital General Idrissa Pouye in 2018. We computed and aggregated the cost of diagnostic, therapeutic and follow. **Results :** Of our cohort of 105 patients mean age was 70 years with a predominance of the age group 60-69 years (48%). Mean hospital stay was 7 days. Sixty two percent of men were retired, 8% were farmers and 7% were traders. The cancer was metastatic in 81%, localized in 16%, land locally advanced in 3% of cases. Curative treatment was carried out in 16% of patients (8 radical prostatectomies, 8 radio-hormonal treatment) vs palliative treatment in 84% of patients. Complete Androgen Blockade (CAB) consisted of pulpectomy (63 patients) and LHRH analogues (14 patients). Cost of diagnostic procedures was XOF 28,497,000, cost of treatment was XOF 167,707,500 and the cost of follow-up was XOF 3,463,900 . The overall annual cost of prostate cancer management for the 105 patients was XOF 199,668,400 with an average annual cost of XOF 1,901,604 per patient. **Conclusion:** The cost of prostate cancer management was very high and was partly worsen by financial inaccessibility. Mortality and morbidity reduction requires the provision of larger advantages of Universal Medical Coverage and a better accessibility to drugs.

Mots clés : prostate cancer, healthcare cost, cancer management, Senegal.

SUMMARY:

Introduction: Le cancer de la prostate a une incidence particulièrement élevée chez les noirs à causes de certaines prédispositions génétiques. Elle affecte en majorité à la retraite avec un pouvoir d'achat limité. Le but de notre étude est d'évaluer le coût de la prise en charge du cancer de la prostate en milieu hospitalier de niveau III. **Méthodologie :** Nous avons effectué une étude descriptive, médico-économique auprès des patients ayant reçu le diagnostic de cancer de la prostate et suivis à l'Hôpital Général Idrissa Pouye en 2018. Nous avons calculé les couts des actes diagnostics, thérapeutiques et de suivi. **Résultats :** La moyenne d'âge des 105 patients inclus était de 70 ans avec prédominance de la tranche 60-69 ans (48%). La durée moyenne d'hospitalisation de 7 jours. Il y'avait 62% de retraités, 8% de cultivateurs et 7% de commerçants. Le cancer était métastatique dans 81%, localisé dans 16% et localement avancé dans 3% des cas. Le traitement curatif était possible chez 16% (8 prostatectomie radicale et 8 radio-hormonothérapie) contre 84% de cas de traitement palliatif. Le BAC médicamenteux était réalisé chez 63 patients, la pulpectomie testiculaire chez 14 autres. Le coût des actes de diagnostic était estimé à 28 497 000 Fcfa, celui des indications thérapeutiques à 167 707 500 Fcfa et celui des actes de suivi estimé à 3 463 900 Fcfa. Le montant annuel de la prise en charge des 105 patients était de 199 668 400 Fcfa ; soit un coût moyen estimé à environ 1 901 604 Fcfa par patient et par an. **Conclusion :** Les coûts de la prise en charge du cancer de la prostate sont très élevés et en partie liées à une inaccessibilité financière des patients. La réduction de la morbidité et de la mortalité de cette pathologie nécessite la mise à disposition élargie des avantages de la couverture médicale universelle et à une meilleure accessibilité des médicaments.

Keywords: cancer de la prostate, coût des soins, prise en charge du cancer, Sénégal..

INTRODUCTION

Access to health care is a major challenge. In Africa, regarding the epidemiological transition, chronic pathologies such as cancer pose enormous issues in their management.

Indeed, prostate cancer is a major public health problem in sub-Saharan Africa, particularly in Senegal. According to WHO data, it is one of the commonest cancers and remains a major cause of cancer-related death in men [1]. It mainly affects men over the age of 50. Its incidence increases with age and is known to be higher in blacks due to certain genetic predispositions. The majority of those affected are retired and have limited financial resources.

The growing economic impact of cancer is well documented. The cost of managing prostate cancer is the total cost of fighting the disease, from diagnosis to treatment. NCI estimates in the US that cost of prostate management has increased from USD 19.2 Billion in 2015 to USD 22.3 billions in 2020 [2]. A study carried out in France in 2003 [3] showed that the costs of the different therapeutic modalities were high in this country.

In Senegal, there are many free-of-charge care policies, but they do not seem to be enough, as in the case of the "Sesame plan", which should ensure 100% coverage of certain procedures. However, several other procedures are not excluded, in particular the examinations necessary for diagnosis and the hormonal therapy which are essential for the treatment of advanced prostate cancer [4].

In 2018, at the Hospital General Idrissa POUYE (HOGIP), data from the Medical Information Unit (MIU) showed that prostate cancer ranked number 1 cancer, while due to the advanced stage of the majority of cases, treatment most often involved hormonal treatment, which remains costly.

In 2019, the Senegalese government launched an initiative to make chemotherapy free of charge, but this did not seem to benefit patients with advanced prostate cancer whose first-line treatment is hormonal therapy.

It would therefore be important to study the cost of prostate cancer treatment to assess the economic impact of this treatment in this mostly retired and economically vulnerable population. Such data will allow prostate cancer to be repositioned as a priority among chronic non-communicable diseases. This will provide a basis for advocacy to involve prostate cancer in sponsoring initiatives such as free care.

The main aim of our study was to contribute to the improvement of prostate cancer management.

The specific aims were:

- To study the epidemiological, clinical and therapeutic aspects of prostate cancer,
- To estimate the cost of prostate cancer diagnosis,

- To estimate the cost of prostate cancer management.

METHODOLOGY

Study design

This was a cross sectional descriptive medical-economic study conducted among patients managed for prostate cancer at HOGIP in 2018.

Setting

The Hospital General Idrissa Pouye (HOGIP) is a Level III referral and academic hospital located in the urban area of Dakar. It delivers emergency and intensive care, medical and surgical care, notably urology. The urology department includes, on the one hand, the hospitalization unit which was equipped with 23 beds and on the other hand, the outpatient unit equipped with two consultation offices, an outpatient care room and a room for exploration (cystoscopy and prostatic biopsy). The other activities are essentially outpatient consultations (every working day), surgical interventions with 5 days of surgery per week and research and training, particularly in cancer genetics and endo-urology.

The diagnostic support units at HOGIP include the laboratory, the imaging department, the nuclear medicine department, and the pathology department.

Participants:

We reviewed the outpatient and inpatient registries of the year 2018 at the urology department of HOGIP to identify patients followed for prostate cancer. Consecutive patients managed for prostate cancer were included. We included in our study all patients diagnosed with prostate cancer in 2018 who were managed and followed-up at HOGIP. We did not include patients with incomplete medical records.

Data Sources

We collected the patients' medico-economic data from a pre-defined questionnaire. The variables of interest were the clinical TNM stage, the therapeutic indications and the costs of the procedures related to the management of prostate cancer. All those informations were collected from patients medical records.

The estimated out of pocket cost of treatment was based on the Senegalese nomenclature of medical and surgical procedures [5], bearing in mind that the cost of a medical or surgical procedure may vary from one hospital to another and is higher in private health facilities. All costs are presented in francs CFA (XOF)

Variables

We studied the following variables:

Demographic aspects: age, geographical origin, mode of entry and discharge, length of hospital stay,

professional status,

Clinical aspects: digital rectal examination, total PSA level, pathologic findings, TNM stage of the disease, therapeutic indication

Financial aspects: cost of diagnostic procedures, treatment and follow-up procedures.

Study size

We used an exhaustive sampling including all eligible patients.

Statistical methods

The information was recorded and processed in an Excel version 2010 database. We calculated frequencies and determined the cost of management according to clinical stages. Quantitative variables were summarized by mean and standard deviation, and qualitative variables were calculated as proportions. Statistical significance was accepted for α 5%.

RESULTS

Epidemiological data

We included in our study 105 patients referred during 2018 for the management of prostate cancer regardless of the stage of the disease.

The average age of the patients was 70 years with extremes of 55 and 90 years.

The most represented age group was 60-69 years, which accounted for 48% of patients, followed by 70-79 years, which accounted for 35% of patients (Table).

Hospitalisation was required for 53 patients (50.5% of cases) and 52 patients were followed up as outpatients.

The mode of hospital admission was referred from home in 100% of cases. The average length of stay in the hospital was 7 days (Range: 1;31 years).

Out of 53 patients admitted at the hospital, 40 (75%) were discharged and sent home and 13 (25%) died in the hospital.

According to their professional status, 65 patients were retired (62% of cases). There were also 8 farmers, 8 workers and 7 shopkeepers.

Clinical, PSA and pathologic data

At the time of diagnosis, digital rectal examination was suspicious in 58 patients (55%).

Mean total PSA value was 1005.79 ng/ml (Range: 4.41;14340ng/ml). The majority of patients had a total PSA of more than 100ng/ml, corresponding to 63 patients (60%) of whom 26% had a total PSA of more than 1000ng/ml.

Prostate biopsy (PB) found prostate adenocarcinoma in all patients. A total of 36 patients had a Gleason score \geq 8, compared with 21 with a Gleason score of 6.

As part of disease extension assessment, Thoracic-

Abdominal-Pelvic CT (TAP CT) was ordered in 98 patients, whole-body bone scintigraphy in 43 patients and Magnetic Resonance Imaging (MRI) in 30 patients.

Metastatic prostate cancer was the most frequent presentation with 81% of cases, compared to 16% of localized prostate cancer and 2% of locally advanced forms.

Therapeutic data

All our patients received treatment for prostate cancer. Curative treatment was indicated in 17 patients (16%) and palliative treatment in 88 patients (84% of cases).

Eight (08) patients underwent radical prostatectomy while radio-hormonal therapy was performed in 10 patients.

In contrast, 73 patients underwent medical castration and 14 underwent testicular pulpectomy. It should be noted that Trans-Urethral Resection Prostate (TURP) was associated with prostate cancer treatment in 10 patients. Chemotherapy was associated with castration in one patient.

Cost estimation of prostate cancer diagnostic procedures

Diagnostic procedures included consultation with the urologist and all additional explorations leading to the diagnosis and treatment indication. Table II summarize the procedures performed for the diagnosis.

Apart from the consultation with the urological surgeon, the cost of the total PSA level was estimated at XOF 15,400 per patient. All patients underwent a prostate biopsy under local anesthesia at an estimated cost of XOF 50,000 including XOF 5,000 for the pre-biopsy prescription, XOF 25,000 for the biopsy procedure and XOF 20,000 for pathology examination of the biopsy. The other explorations were not systematic. These were urine culture in 45 patients, CT scan in 98 patients, bone scan in 43 patients, MRI of the prostate in 30 patients and ultrasound of the urinary tract in 12 patients. Thus the cost of diagnostic procedures was estimated at a total of XOF 28,497,000 for 105 patients, corresponding to an average cost of XOF 271,400 per patient.

Pre-anaesthesia consultation

Pre-anaesthesia consultation (PAC) was required for some procedures including radical prostatectomy and TURP. A total of 19 patients benefitted from the PAC. These included the consultation with the anaesthesia for XOF 5,000, as well as the pre-anaesthesia check-up estimated at a total of XOF 60,300.

Thus the total cost of PAC was XOF 65,300 per patient and the overall amount for 19 patients who had recourse to PAC was estimated at XOF 1,240,700.

Cost estimation of prostate cancer management approach

Testicular pulpectomy

Testicular pulpectomy was estimated at XOF 34,000 per patient. It was performed under local anaesthesia with single day of admission estimated at XOF 6,000 per patient. The consumables needed for the pulpectomy were estimated at XOF 11,000 per patient. This brings the total cost of pulpectomy to XOF 51,000 per patient.

In our study, 14 patients underwent pulpectomy for a total amount of XOF 14,00. In 01 patient, the testicular pulpectomy was associated with trans-urethral resection of the prostate (TURP). TURP is a surgical procedure that requires a pre-anesthetic consultation and a hospital stay of an average of 4 days. The cost of TURP was estimated at XOF 507,900 per patient, including hospitalization, operative kit, anesthesia kit and pharmaceutical consumable and devices. Thus, for this patient, the overall cost of the combined testicular pulpectomy and TURP was estimated at XOF 558,900.

Medical Complete Androgen Blockade (CAB)

Medical CAB was based on a non-steroidal anti-androgen such as Bicalutamide at 50 mg per day, corresponding to one box per month, combined with an LH-RH analogue such as Goserelin or Triptorelin at one dose per month. The box of Bicalutamide, 30 tablets costed XOF 56,000 and the box of LH-RH analogue was XOF 98,000 per month.

This brings the annual hormonal treatment per patient to XOF 1,848,000. The overall medical CAB cost for 63 was estimated at XOF 116,424,000.

It should be noted that medical CAB was combined with TURP in 9 patients. The cost of CAB for 9 patients was estimated to XOF 16,632,000 and the cost of TURP to XOF 4,571,100 for the 9 patients. Thus the overall cost of TURP associated with annual hormonal treatment for 9 patients was estimated at a total of XOF 21,203,100.

It should also be noted that CAB was associated with chemotherapy in 01 patient. This involved consultation with the medical oncologist for an amount of XOF 5,000 and the pre-chemotherapy assessment for an estimated cost of XOF 44,000.

This patient benefited from six courses of chemotherapy for a total of XOF 449,400, including hospitalization and costs of drugs. This brings the overall cost of chemotherapy for this patient to XOF 498,400.

Thus the cost of the CAB (1,848,000 CFA francs) combined with the cost of chemotherapy (XOF 498,400) amounted to XOF 2,346,400.

Radical prostatectomy

Radical prostatectomy was performed for 06 patients. The cost of radical prostatectomy was estimated by adding the costs of pre-anesthesia procedures, the cost of the operative kit, the anesthesia kit and the consumables and drugs, for a total of XOF 829,400

per patient, representing XOF 4,976,400 for the 6 patients.

Radio-hormone therapy

Radio-hormone therapy alone was indicated for 8 other patients (18 months of hormone therapy based on anti-androgens, one box per patient (XOF 448,000 for the 8 patients) and LH-RH analogue, 18 boxes per patient (XOF 14,112,000 for the 8 patients); which makes a total amount for hormone therapy estimated at XOF 14,560,000 for the 8 patients). A flat rate of XOF 150,000 CFA per patient was charged for the number of sessions required, which brings the cost of radiotherapy to XOF 1,200,000 for the 8 patients. Thus the total cost of radio-hormone therapy was estimated at XOF 15,760,000 for the 8 patients, or XOF 1,970,000 per patient.

Post-radical prostatectomy radio-hormonal therapy for 2 patients was combined with 6 months of hormonal therapy for each patient. This hormone therapy was based on an LH-RH analogue, one injection per month estimated at XOF 98,000 per patient (XOF 1,176,000 for the two patients) and a non-steroidal anti-androgen in the form of one box per patient estimated at XOF 56,000 (XOF 112,000 for the two patients). This brings the cost of hormonal treatment before radiotherapy to XOF 1,288,000 for the two patients. The radical prostatectomy estimated at XOF 829,400 per patient reaches XOF 1,658,800 for the two patients. Thus for these two patients, radical prostatectomy (XOF 1,658,800), followed by 6 months of hormonal therapy (XOF 1,288,000) combined with radiotherapy (XOF 300,000) cost XOF 3,246,800 for the two patients, corresponding to XOF 1,623,400 per patient.

In 1 patient, TURP (XOF 507,900) was followed by radiotherapy (XOF 150,000) combined with 18 months of hormone therapy (XOF 1,820,000). Thus, TURP + radio-hormonotherapy were estimated at a total cost of XOF 2,477,900 for this patient.

Summary of the cost of therapeutic indications for prostate cancer

The estimated cost of the therapeutic indications is shown in Table III. It is calculated by adding up all the amounts for the therapeutic indications, which gives a total amount of XOF 167,707,500 for the 105 patients.

Cost estimation of follow-up

During the follow-up of patients, at least two total PSA tests were carried out for a total of XOF 3,234,000 for 105 patients. Serum Creatinin level and full blood counts (FBC) were assessed in 19 patients for XOF 229,900. Thus, the cost of follow-up procedures was estimated at XOF 3,463,900.

Summary of the global cost of prostate cancer management

These are, on the one hand, the cost of diagnosis (XOF 28,497,000) and follow-up (XOF 3,463,900) procedures, and on the other hand, the cost of all therapeutic indications for prostate cancer (XOF 167,707,500).

Thus, the annual cost of managing the 105 patients followed for prostate cancer in 2018 was estimated at XOF 199,668,400, with an estimated average cost of XOF 1,901,604 per patient per year

DISCUSSION

We sought to estimate the cost of prostate cancer management in a tertiary, academic and national referral hospital. The limitation of our study is related to the short study period with a relatively low sample size. Despite this limitation, this study has the strength of being the first economic study on patients diagnosed and treated for prostate cancer. In addition, the study was conducted throughout a whole calendar year in a major referral center giving the possibility of making long term inference to the real cost of prostate cancer care. In addition to that, prostate cancer is the first malignancy treated at our center in 2018.

Our report indicates a high overall cost of prostate cancer management in a setting or resource poor setting. This cost is even too high in a context of palliative treatment due to cost incurred by hormonal treatment. The cost would be even higher if we used the recent hormonal therapies. The high cost of prostate cancer management is well documented with varying relative cost of the different treatment modalities [6;7].

In our cohort, we noted that the majority of patients were over 60 years of age, accounting for 92% of the population, with an average age of 70 years. This result is in accordance with the findings of Gueye et al. [8] indicating a mean age at diagnosis of 69 years.

A total of 52 patients were followed up in consultation and outpatient care, but for the 53 others, hospitalization was required, representing a little more than half of the patients (50.5%). This number of patients hospitalized for prostate cancer represented 5.3% when compared to the total number of hospitalizations in urology in 2018 for all causes combined, which was 1003 patients.

At hospital admission, all patients came from home (100%). This was due, on the one hand, to the good reputation of HOGIP in the management of prostate cancer among the population and, on the other hand, to a good referral from other practitioners to our institution. As a result, patients are followed up from the first day of consultation and all treatments were pre-planned, particularly for hospitalization.

The most frequent mode of discharge was a return to home in 75% of cases of hospitalization. This reflects

the good evolution of the management of prostate cancer in the urology department of HOGIP, which has become a reference center in recent years. However, 13 cases of death out of the 53 hospitalized patients were recorded, accounting for a mortality rate of 12% of the total number of patients, which is still high, without including possible deaths at home that were not reported. Indeed, prostate cancer mortality is underestimated in sub-Saharan Africa, particularly in Senegal, due to the absence of a functional cancer registry.

Prostate adenocarcinoma was the only histological type found. Advanced prostate cancer with distant metastases was the most frequent form representing 81% vs 16% of localized prostate cancer and 3% of locally advanced forms. This is what motivated the indication of palliative treatment in the majority of cases. These results have been found in previous studies such as that of Niang et al. [9] in which surgical castration was most often used.

The cost of prostate cancer management was estimated by taking into account the cost of diagnostic procedures combined with the cost of therapeutic indications and patient follow-up during 2018.

The average cost of diagnostic procedures was 271,400 CFA francs per patient. This amount is high for an elderly population, most of whom are economically inactive, with a majority of retired men accounting for 62% of the workforce. Already in 2017, a survey conducted by the National Agency for Statistics and Demography (NASD) [10] showed that 50.9% of Senegalese did not go to health facilities due to a lack of financial resources.

This situation partly explains the long time to consultation period and the delay in diagnosis. This is why we recorded 81% of advanced forms of prostate cancer for which curative treatment is not possible. CAB, which is a non-curative treatment and is indicated in half of the cases, was estimated to cost 1,848,000 CFA francs per patient and month. This amount far exceeds that of radical prostatectomy, a curative treatment estimated at 829,400 CFA francs per patient. The cost of radiotherapy was estimated at 150,000 CFA francs but became more expensive because of the 18 months of hormone therapy required for most patients, which was estimated at 2,212,000 CFA francs. Treatment with intent to cure in less than a year is much cheaper than palliative treatment for one year, whereas the latter is for life. It is important to point out that the palliative treatment in our cohort concerns only first-line hormone treatment and not the new hormone therapies, which are exponentially more expensive and inaccessible in Senegal [11].

Thus, the problem of drug costs remains a concern particularly for low-income countries [12].

It is also extremely important to diagnose cancer early since curative treatment is only possible for localized cancers.

It should also be noted that the cost of all therapeutic procedures, estimated at 167,707,700 CFA francs, far exceeds the cost of diagnostic procedures estimated at 28,497,000 CFA francs. This is one more reason to find solutions to reduce the costs of treating prostate cancer.

Indeed, the more advanced cancer, the longer the treatment and the higher the cost of treatment.

The annual cost of treating 105 patients with prostate cancer in 2018 was 199,668,400 CFA francs, corresponding to an estimated average cost of around 1,901,604 CFA francs per patient per year, whereas the annual per capita income was just over 814,000 CFA francs in 2016 [10], and this income collapses after retirement, which is the case for 62% of our patients.

Moreover, this annual amount remains below the real cost, especially as several other elements are not accounted for here, notably the costs of adjuvant treatment, hospital travel costs and the cost of counter-productivity of patients who are still professionally and economically inactive due to the disease.

It should also be noted that for some patients the new therapies that have emerged help to better control tumor progression and improve survival. These are expensive molecules and not yet marketed in our country, for which a subsidy is more than necessary, especially since the majority of patients (62%) were retired at the time of diagnosis. These include Abiraterone Acetate, Enzalutamide and Apalutamide [13-16].

This economic situation is more worrying for a category of patients in the informal sector, given their socio-economic situation, as the absence of certain payment methods such as health insurance and the Free options, which has several restrictions. This economic barrier has multiple consequences, in particular, the delay in diagnosis and curative treatment.

Prostate cancer remains a chronic pathology whose treatment can last several years at a high cost. Thus, for better management, which is a fundamental right, the policies of healthcare coverage must be improved, especially for this vulnerable group of patients. Finally, to better understand this scourge, funding must be strengthened, especially in Africa, for health research, particularly on the genetics of prostate cancer.

CONCLUSION

Our study indicates a high cost of prostate cancer in a context of mostly due to a predominance of advanced metastatic prostate cancer. The cost of diagnostic procedures, treatment and follow-up exceeds the financial capacities of the general population especially retired men. The fight against this economic burden could be achieved by popularizing and extending the advantages of Universal Health Coverage

Thus, comparative studies of the different payment modalities are necessary to determine the impact of free policies on the reduction of the economic burden of prostate cancer. Care improvement and precision medicine will also make the treatment more cost effective.

What is already known on this topic:

- Prostate cancer is major public health concern worldwide with a higher incidence and aggressiveness in black men
- Prostate cancer is considered a chronic, non-communicable disease with in most cases a long course
- Prostate cancer treatment depends on disease stage with varying cost depending of the type of treatment
- What this study adds:
- The cost of prostate cancer is high in our population especially considering the patients revenues
- The cost of palliative care is accentuated by high cost of hormonal treatment
- There is a need to develop policies to make the appropriate drugs physically and financially accessible
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Competing interest :

There is no conflict of interest to declare pertaining to this study for any of the authors

Authors' contributions :

1. Conception and design, acquisition of data, or analysis and interpretation of data : Dr Mohamed Jalloh, Dr Thierno Amadou Diallo, Dr Jada Mouanza, Pr Serigne Gueye
2. Drafting of the article : Mohamed Jalloh, Thierno Amadou Diallo, Medina Ndoeye, Jada Mouanza, Mouhamadou Moustapha Mbodji, Abdourahmane Diallo, Lamine Niang, Serigne Magueye Gueye
3. Final approval : Mohamed Jalloh, Thierno Amadou Diallo, Medina Ndoeye, Jada Mouanza, Mouhamadou Moustapha Mbodji, Abdourahmane Diallo, Lamine Niang, Serigne Magueye Gueye

Tables and Figures

Table I : Summary of diagnostic cost in patient managed for prostate cancer in 2018 at HOGIP

Table II : Cost estimation according to therapeutic indications in patients managed for prostate cancer at HOGIP in 2018

Figure 1: Distribution of the 105 patients diagnosed with prostate cancer at HOGIP in 2018 according to the age group

Figure 2: distribution of the 105 patients with prostate cancer at HOGIP in 2018 according to the type of therapeutic

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Table I: Distribution of the 105 patients diagnosed with prostate cancer at HOGIP in 2018 by age group.

Age group	Percentage
< 55 years	0 (0%)
55-59 years	8 (8.4%)
60-69 years	50 (48%)
70-79 years	37 (35%)
80-89 years	10 (10%)
Total	100%

Table II: Summary of diagnostic cost in patient managed for prostate cancer in 2018 at HOGIP

Procedures	Number of patients	Cost per unit (XOF)	Global Amount (XOF)
Urology consultation	105	5,000	525,000
PSA test	105	15,400	1,617,000
Urine culture test	45	15,000	675,000
PB + Pathology examination	105	50,000	5,250,000
Thoraco Abdomino Pelvic CT Scann	98	125,000	12,250,000
Prostate MRI	30	150,000	4,500,000
Whole-body bone scintigraphy	43	80,000	3,440,000
Urinary tract ultrasound	12	20,000	240,000
Total			497,000

Table III: Cost estimation according to therapeutic indications in patients managed for prostate cancer at HOGIP in 2018

Therapeutic indications	Number	Cost/patient (XOF)	Amount (XOF)
Testicular Pulpectomy	14	51,000	714,000
Testicular Pulpectomy + TURP	1	558,900	558,900
CAB	63	1,848,000	116,424,000
CAB+ TURP	9	2,355,900	21,203,100
CAB+ Chemotherapy	1	2,346,400	2,346,400
Radical Prostatectomy	6	829,400	4,976,400
Radical Prostatectomy + Radio-Hormonal Therapy	2	1,623,400	3,246,800
Radio-Hormonal Therapy	8	1,970,000	15,760,000
TURP+ Radio-Hormonal Therapy	1	2,477,900	2,477,900
Total	105		167,707,500

STROBE Statement—Checklist of items that should be included in reports of cross-sectional studies
All items highlighted in Yellow were included in the reports

	Item No	Recommendation
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported
Objectives	3	State specific objectives, including any prespecified hypotheses
Methods		
Study design	4	Present key elements of study design early in the paper
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias
Study size	10	Explain how the study size was arrived at
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) If applicable, describe analytical methods taking account of sampling strategy (e) Describe any sensitivity analyses
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage

		(c) Consider use of a flow diagram
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest
Outcome data	15*	Report numbers of outcome events or summary measures
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	18	Summarise key results with reference to study objectives
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalisability	21	Discuss the generalisability (external validity) of the study results
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.