

# Study of Mortality in a Urology Department: A Case of the Urology Department of the Cocody University Hospital

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## Abstract

**Objective:** To analyze the rate and the main causes of mortality in the Urology Department of the CHU of Cocody. **Patients and Methods:** A retrospective study was conducted on 548 patients who died between January 2000 and December 2021 in the Urology Department of Cocody University Hospital. The information was obtained from medical records, hospitalization registers and death certificates, which made it possible to study the frequency and causes of death with the help of Statistical Package for the Social Sciences 16.0 (SPSS). **Results:** The overall mortality rate was 21.13%. The sex ratio was 12.7 men to 1 woman, with an average age of 65.5 years (21 - 89 years). The causes of death were represented by cancer pathologies (78.10%). Prostate cancer, which was the first reason for consultation, was the first cause of death in 55.66% of cases, followed by bladder cancer, BPH, Fournier gngrene, kidney cancer, and urethral stricture, cancer of the testicles, with respectively 17.52%, 10.77%, 7.12%, 3.46% and 1.46%. **Conclusion:** The mortality rate in Urology Department of the CHU of Cocody remains high and is essentially to urological cancers.

## Keywords

Mortality, Urology Department, Urological Cancers, Non-Cancerous Conditions

## 1. Introduction

Mortality is the study of deaths and their evolution in a population [1]. Its study in a hospital department allows for a control and revision of therapeutic measures. In the literature, several studies on hospital mortality have been carried out in pae-

diatrics, gynaecology and obstetrics and in infectious disease departments [2].

Relatively few studies have been performed on in-hospital mortality in urology. In Côte d'Ivoire, Dékou *et al.* had carried out the last study on mortality in urology in 2009 [3].

The aim of this work was to estimate the mortality rate and to identify the main causes of death in urology.

## 2. Patients and Methods

This was a retrospective descriptive study carried out in the Urology Department of the Cocody University Hospital over a period of 22 years, from January 1, 2000 to December 31, 2021.

The sample consisted only of patients who died during hospitalization in the department during the study period. Data were collected from the hospitalization register, the urology department's death register, and deceased patient records.

The parameters evaluated were essentially the age and sex of the deceased patients; clinical diagnosis, comorbidity factors, and causes of death. The data analysis was done by SPSS 16.0 software.

## 3. Result

2593 patients were hospitalized during the study period and 548 deaths were recorded.

### 3.1. Distribution of Deaths by Year

**Table 1.** Distribution of patient deaths by year.

Year	Hospitalized	Deceased	Percentage (%)
2000	132	28	21.21
2001	16	3	18.75
2002	34	7	20.59
2003	18	4	22.22
2004	34	7	20.59
2005	130	27	20.77
2006	26	5	19.23
2007	60	13	21.66
2008	26	5	19.23
2009	86	18	20.93
2010	60	13	21.66
2011	111	24	21.62

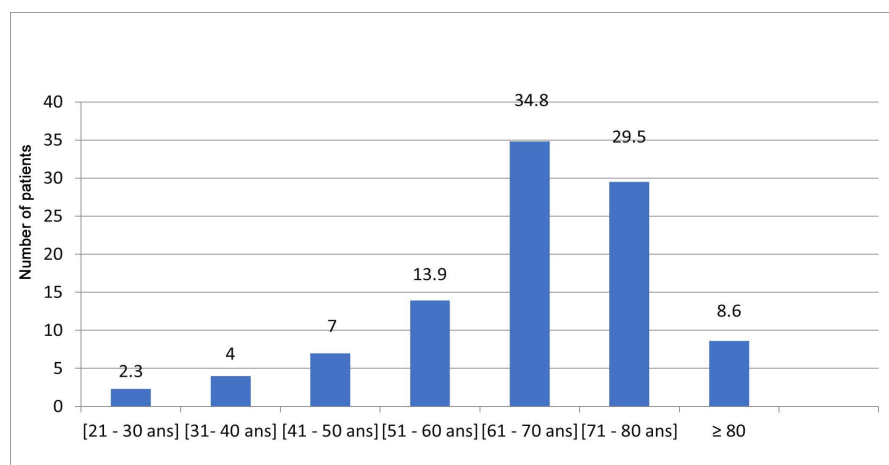
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2012	60	13	21.66
2013	267	56	20.97
2014	407	86	21.13
2015	267	56	20.97
2016	52	11	21.15
2017	70	15	21.43
2018	301	64	21.26
2019	67	14	20.89
2020	52	11	21.15
2021	319	67	21.00
Total	2593	548	21.13

The highest number of deaths was recorded in 2014, with 86 deaths and an overall mortality rate of 21.13% (**Table 1**).

### 3.2. Age

The average age of patients who died was 68 years.

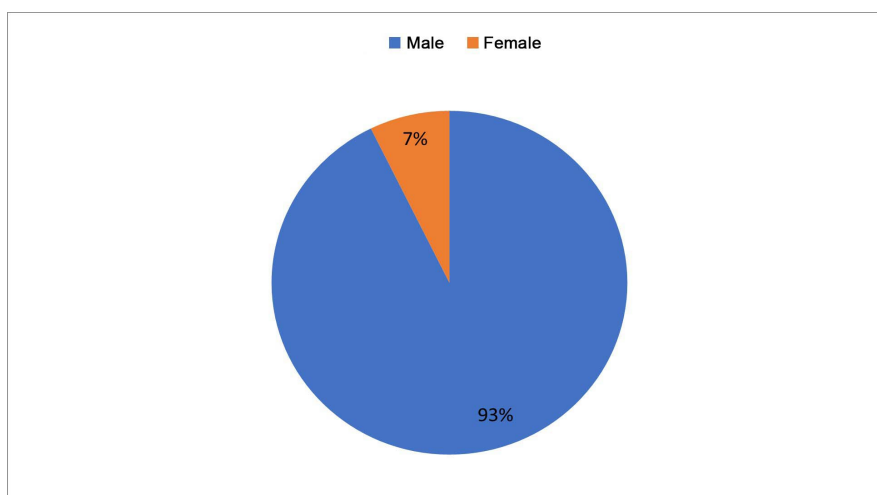


**Figure 1.** Distribution of deceased patients by group of age.

Average age was 65.82 years; Median was 68 years; Standard deviation was 12.714; minimum = 21 years old; maximum = 89 years. Patients aged 51 to 80 years (78.8%) predominated with two peaks in the [61 - 70] and [71 - 80] brackets with 34.8% and 29.5% respectively (**Figure 1**).

### 3.3. Sex

Male gender was dominated with sex-ratio of 12.7 males for a female (**Figure 2**).



**Figure 2.** Distribution of patients according to sex.

### 3.4. Comorbidity Factors

Cancer was the first responsible of death in this study (**Table 2**).

**Table 2.** Distribution of patients according to comorbidity factors.

Pathology	Numbers	Percentage (%)
Prostate cancer + Hypertension	41	33.06
Benign prostate hyperplasia + hypertension	15	12.09
Bladder cancer + hypertension	30	24.19
Ureteral stricture + HIV	9	7.26
Fournier gangrene + Diabetes	19	15.32
Fournier gangrene + Hiv	103	8.06
<b>Total</b>	<b>124</b>	<b>100</b>

### 3.5. Mortality per Pathology

**Table 3.** Distribution of patients according to the cause of death.

Pathology	Numbers of Deceased	Numbers Hospitalized	Percentage (%)
Prostate cancer	305	1084	28.14
Penile fracture	0	21	0
Benign prostate hyperplasia	59	575	10.80
Ureteral stricture	19	162	11.72
Kidney abscess	0	13	0
Ectopic testicular	0	4	0
Vescio-vagina fistular	0	8	0
Inguinal hernia	2	4	50

**Continued**

Hydrocele	0	8	0
Renal calculus	0	1	0
Ureteric calculus	1	63	1.59
Fournier gangrene	39	134	29.10
Orchitis	0	56	0
Priapism	0	142	0
Prostatitis	0	16	0
Pyelonephritis	0	4	0
Ureteral stricture	0	8	0
Testicular torsion	0	13	0
Renal tumor	19	92	20.65
Testicular tumor	8	8	100
Bladder tumor	96	178	53.63
<b>Total</b>	<b>548</b>	<b>2593</b>	<b>21.13</b>

Infection disease was represented by Fournier gangrene with 29.10% (**Table 3**).

**3.6. Mortality****Table 4.** Distribution of patients according to pathology.

<b>Pathologie</b>	<b>Numbers</b>	<b>Percentage (%)</b>	<b>Rank</b>
Prostate cancer	305	55.66	1
Bladder cancer	96	17.52	2
Benign prostate hyperplasia	59	10.77	3
Fournier gangrene	39	7.12	4
Uretral stenosis	19	3.46	5
Renal tumor	19	3.46	5
Testicular cancer	8	1.46	7
Inguinale hernia	2	0.36	8
Ureteral calculus	1	0.18	9
<b>Total</b>	<b>548</b>	<b>100</b>	

Prostate cancer was responsible of the highest rate of mortality. It was followed by bladder cancer (**Table 4**).

**3.7. Mortality Due to Cancerous Pathology**

Pathology of cancer was responsible of 78.10% of death (**Table 5**).

**Table 5.** Distribution of patients according to cancerous pathology.

Pathology	Numbers	Percentage (%)	Rank
Prostate cancer	305	71.26	1
Bladder cancer	96	22.43	2
Renal cancer	19	4.44	3
Testicular cancer	8	1.87	4
<b>Total</b>	<b>428</b>	<b>100</b>	

### 3.8. Mortality Due to Non-Cancerous Conditions

Non-cancer pathologies were responsible of 21.90% of death (**Table 6**).

**Table 6.** Distribution of patients according to non-cancerous condition.

Pathology	Numbers	Percentage (%)	Rank
Benign prostate hyperplasia	59	49.17	1
Fournier gangrene	39	32.5	2
Ureteral stenosis	19	15.83	3
Inguinal hernia	2	1.66	4
Renal calculus	1	0.83	5
<b>Total</b>	<b>120</b>	<b>100</b>	

## 4. Comment

During the study period, 2593 patients were hospitalized and 548 were deceased, *i.e.*, a hospital mortality of 21.13%. Mortality per year showed a high incidence in 2003 of 22.22%.

Siné *et al.*, in Senegal, had observed a hospital mortality of 2.9% over a period of 6 years [4].

Our study period was 20 years, which is more than 3 times the length of Sine *et al.*'s study period. The long period could explain the difference in hospital mortality. In addition, Côte d'Ivoire experienced the military-political crisis in 2022 and the post-electoral crisis in 2010. During these crises, the dysfunction of health systems, the lack of quality health care workers contributed to the increase in mortality in our study.

The mean age of the patients who died was 65.8 (or 68? to be verified) years.

Siné *et al.* had found an average age of 63.6 in 2016 in Senegal [4], which was more or less equal to ours.

Takangno *et al.* had observed an average age of 43 years [5].

Takangno *et al.*'s study was carried out in a general surgery department where many pathologies develop in subjects before the age of 50. In urology, the majority of pathologies that cause death occur after the age of 50.

The male sex predominated in our study with a sex-ratio of 12.7 men to one

woman. Our result was similar to that of Dembélé *et al.*, who had observed a sex ratio of 17.8 men to one woman [6].

Generally speaking, urology departments are more frequented by men. Indeed, urology treats disorders of the urinary and genital tract of men. While for women, it only treats urinary tract conditions. In addition, prostate cancer was the leading cause of death. This pathology is only observed in men.

Comorbidity factors were dominated by hypertensives.

This pathology is becoming more and more common in the general population.

Hamza had observed smoking as the most common comorbidity factor [7].

This difference is due to the fact that Hamza's study was carried out in Morocco, where the population has a high propensity to consume tobacco, as in other Maghreb countries.

Urogenital cancers were responsible for 78.1% of deaths. Siné *et al.*, in their study, 56% of deaths were due to urological cancer [4]. In Hamza's study in Morocco, urological cancers were responsible for 60% of deaths [7]. In some developed countries, urogenital cancers were the leading cause of death in urology [8]-[10].

The high mortality of urological cancers in our context could be explained by the fact that diagnosis is usually made at the metastatic stage. Many patients consulted late in our context. Patients only come to hospital if symptoms persist or worsen.

Prostate cancer was the leading cause of death with 71.26%, followed by bladder cancer with 22.43% and kidney cancer with 4.44%. In Senegal, Siné *et al.* had prostate cancer [4]. In the literature, several studies have observed prostate cancer as the leading cause of death [11] [12].

Non-cancerous conditions were responsible for 18% of deaths. Benign prostatic hyperplasia accounted for 49.17% followed by Fournier gangrene with 32.5%. This result was comparable to that of Siné *et al.* in Senegal [4].

BPH was the leading cause of hospitalization. It was the leading cause of death from non-cancerous diseases. It was BPH complicated by abundant hematuria with a state of hemorrhagic shock. The unavailability of products, generally due to the impoverishment of the population, caused the death of these patients. This reveals the shortage of blood products in the Ivorian health system.

Sometimes the death was related to ionic disorders (dyskalemia, dysnatremia) caused by obstructive renal insufficiency, which sometimes complicated benign prostatic hyperplasia.

Fournier gangrene was the only cause of death related to infectious diseases. It represented 23%. In Bakayoko's study, this condition did not cause death. Deaths of infectious origin accounted for 68%, mainly due to urinary phlegmon of the bursa [6].

In the contemporary literature, causes of infectious origin were 68% [13] [14].

Sepsis and subsequently septic shock caused the death of patients. In the emergency departments, due to a lack of good resuscitation, these patients died in the

preoperative period.

## 5. Conclusions

Hospital mortality in our context remains high compared to developed countries. Urological cancers were responsible for more than 70% of cases. Prostate cancer remains the leading cause of death at Urology Department of the CHU of Cocody. Thus, the need to organize screening campaigns for people above 50 years in order to have an early diagnosis of localized prostate cancer. Which have curative treatment.

Though our study was carried out in the largest Urology Department of Côte d'Ivoire, it was a limited fact that there are two of those departments. Thus, there is a need to extend our study.

## Conflicts of Interest

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

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