

**Research Article**
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## Diabetic Mortality in N'Djamena

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### ABSTRACT

**Introduction :** The diabetes pandemic is classified as the eighth leading cause of death in both sexes and the fifth leading cause of death in women. The aim of this study was to determine diabetes-related mortality in the hospital setting.

**Method:** this was a descriptive study, based on the records of diabetic patients who died in hospital in the various departments of the "National Reference" University Hospital of N'Djamena, from January 2015 to December 2019 (i.e. 5 years). The variables studied were epidemiological, clinical, paraclinical, therapeutic and evolutionary. Data analysis was performed using SPSS.25 software.

**Results:** During the study period, 1282 deaths occurred, 185 of them due to diabetes, i.e. a prevalence of **15.85%**. The mean age of patients was 57.24 years (extremes 18 and 88 years). The age group most affected was 40 to 60, with 82 patients (44.3%). The patients were predominantly male (sex ratio 1.56). Their socio-economic level was average in 52.4% (97 cases) and low in 40.5% (75 cases). Type 2 diabetes accounted for 91% (168 patients) and type 1 for 09% (17 patients). Reasons for hospitalization were metabolic complications (23.78%), followed by hypertensive crises (13.51%) and cerebrovascular accidents (08.11%).

The risk factors most frequently associated with diabetes were hypertension (57.90%), dyslipidemia (31.35%) and alcohol (22.30%). Complications associated with death were dominated by nephropathy (63.3%) and metabolic complications (61.1%). More patients died in intensive care (58.91%) than in cardiology (16.90%).

**Conclusion:** Diabetes-related mortality in hospitals remains very high, which is why we need to step up awareness-raising to reduce diabetes-related deaths.

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### Introduction

The diabetes pandemic is classified as the eighth leading cause of death in both sexes, and the fifth leading cause of death in women. In low- and middle-income countries, the rate of deaths due to diabetes or hyperglycemia occurring before the age of 70 is higher than in high-income countries [1,2].

The aim of this study was to determine diabetes-related mortality at the Centre Hospitalier et Universitaire "Référence Nationale" (CHU-RN) in N'Djamena.

### Method

This was a descriptive study, based on the records of diabetic patients who died in hospital in the Diabetology, Cardiology, General Surgery and Intensive Care Units of the CHU-RN of N'Djamena, during the period from January 2015 to December 2019 (i.e. 5 years). The variables studied were epidemiological, clinical, paraclinical, therapeutic and evolutionary. Data analysis was performed using SPSS.25 software.

### Results

During the study period, 1282 deaths were recorded at CHU-RN, 185 of which were due to diabetes, representing a mortality rate

of 15.85%. The mean age of patients who died of diabetes was 57.24 years, with extremes ranging from 18 to 88 years. The age group most affected was 40 to 60, with 44.3%. The sex ratio was 1.56. Their socio-economic level was average in 52.4% and low in 40.5%. Type 2 diabetes accounted for 91% and type 1 for 09%. Reasons for hospitalization were metabolic complications (23.78%), hypertensive crises (13.51%) and stroke (08.11%). The risk factors most frequently associated with diabetes were hypertension (57.90%), dyslipidemia (31.35%) and alcohol (22.30%). The complications associated with death in diabetic patients were nephropathy (63.3%) and metabolic complications (61.1%). Patients died more frequently in the intensive care unit (58.91% of cases) and in the cardiology department (16.90% of cases). Death occurred within 5 days of hospitalization in 50.3% of cases.

#### Distribution of patients who died of diabetes in the different departments

Departments Related Mortality to diabetes	Number Hospitalisation	Number Diabetics	Total Deaths	diabetes-related deaths	diabetes-related mortality
CARDIOLOGY	2488	201	290	34	16,9%
GENERAL SURGERY	3372	277	210	27	9,71%
DIABETOLOGY	656	560	75	48	8,58%
REANIMATION	1311	129	707	76	58,91%
Total	7827	1167	1282	185	15,85%

#### Discussion

The mean age of patients who died of diabetes was 57.24 years, with extremes of 18 and 88 years. This result is close to those of Dionadji M. et al. in Chad in 2015 and Mbaye M.N. et al. in Senegal in 2011, who found a mean age of 51 years [3] and 58 years [4] respectively. We noted a male predominance with a sex ratio of 1.56. This same finding was made by other authors such as Coulibaly et al. in 2019 in Mali [5]. On the other hand, Rafamatanantsoa et al. in Madagascar in 2019 noted a female predominance with a sex ratio of 0.93 [6]. Patients who died of diabetes had an average socio-economic level in 52.4% (97 cases), and a low one in 40.5% (75 cases). This could explain the delay in taking charge of the disease, which would have increased the number of patients dying, since in most developing countries like Chad, there is no health insurance, and the entire burden of care is borne by the patients themselves or their families. This was noted by Lokrou et al. in 2013 in Côte d'Ivoire, who found that 84.3% of patients had a low socio-economic level [7]. Hence the importance of rapidly implementing universal health coverage to solve this financial problem.

The overall diabetes-related mortality rate in the four departments was 15.85%. In the intensive care unit alone, the rate was 58.91%. This could be explained by the fact that the intensive care unit of the Centre Hospitalier Universitaire la Référence Nationale receives all bedridden patients from all the other departments, and with a hospital capacity of just twelve beds and insufficient staff in number and quality, cannot effectively care for patients in general and decompensating diabetics in particular. In the cardiology department, the diabetes-related mortality rate was 16.9%. This could be explained by the high number of hypertensive attacks, strokes and PAO noted in this study. This corroborates the literature, which states that cardiovascular diseases, including hypertension, dyslipidemia, infections and CKD, are recognized as the main risk factors for death.

in diabetics [8-10]. For the Diabetology department, we had noted a significant drop in the diabetes-related mortality rate from 16.9% in 2015, to 8.57% in 2020 [3]. This result can be attributed to an increase in the number of specialist doctors in the Diabetes Department, and above all to the systematic individual therapeutic education provided by the department's staff for diabetic patients. Our overall mortality rate (15.85%) is similar to that of Dionadji et al. in 2015 in Chad, which was 16.4%, but remains higher than that of Rafamatan Antsoa J.F. et al. in Madagascar in 2019, which

was 5.4% [3,6]. The main complications found in patients who died of diabetes were: nephropathy (63.3%), ketoacidosis (38.9%), neuropathy (37.3%) and heart disease (58%).

This observation was made by Aouba A. et al. in 2008 and ORY. F et al. in 2007 in France, who found heart disease with hypertension to be the main reason for hospitalization of diabetics, as did other authors [11-15]. And Ibrahim H. et al. in Chad in 2016 found that 77.3% of diabetic patients also had hypertension, and 29.6% of diabetic patients had chronic renal failure [8].

#### Conclusion

Diabetes-related mortality remains very high in hospital settings in Chad, hence the need to raise awareness among the population and healthcare staff of cardiovascular risk factors and the acute and chronic complications of diabetes, in order to reduce deaths linked to this chronic disease as much as possible.

#### References

1. IDF. (2019) The International Diabetes Federation diabetes atlas (9th edition).
2. WHO Mortality Database. Geneva, World Health Organization, ([http://apps.who.int/Healthinfo/statistics/mortality/causeofdeath\\_query/](http://apps.who.int/Healthinfo/statistics/mortality/causeofdeath_query/), accessed October 10, 2022).
3. Dionadji M, Oumar A, Nodjito M (2015) Ibrahim A Prevalence of medical complications in diabetics hospitalized at the Hôpital Général de Référence Nationale de Ndjamen. Health Sci. Dis 16: www.hsd-fmsb.org.
4. M.N.Mbaye, K.Nyang, A.SAR. A.MBaye, D.Diedhiou, et al. (2011) Epidemiological aspect of Diabetes in Senegal: result of a survey on cardiovascular risk factors in the city of Saint Louis. Medicine of metabolic diseases. December 15. N°6.
5. Coulibaly.D.S, Kodio.S. Samaké .D, Konaté .I, Sangaré.D, et al. (2019) causes of death of patients hospitalized in the general medicine wards of Niang Nankoro Fomba Hospital in Segou from 2016-2017. Health SCI. Dis 21: 106-109.
6. J.F. RAFAMATANAN TSOA, F Raben Jarison, Ah LERAKOTOBÉ, S.Raharinalona, J.Rasazanadrasara, O.Ralijaonan et al. (2019) Diabetes-related mortality seen in the endocrinology department of CHU. Joseph Raseta de Befelatananan, Antananarivo. rev. Anesth. Reanim. Med. URG Toxicol 11: 31-38.
7. A. Lokrou, J.abodo, P Koffi Dago, F. kouassi, A. Hue, AJC Azoh et al. (2013) Caractéristiques dialectologiques et gériatriques du sujet diabétique âgé Hospitalisé à youpougou,

- Rev. Int sc. Med 15: 64-68.
8. Ibrahim H, Guillaume M A, Mouhamadou M C, Mahamat, Y, Matar S D, et al. (2016) Profile of diabetic nephropathy at CHURN. Pan Medical Journal 24 :193.
  9. Bah A.O. K.H (2014) Hospital morbidity and mortality due to chronic renal failure in a country with limited access to dialysis Nephrology & Therapeutics Volume 10, Issue 5, September 2014: 394.
  10. Murray CJ, Lopez AD (1997) Mortality by cause for eight regions of the world: Global Burden of Disease Study. Lancet 349: 1269-1276.
  11. Ory F, Faure C, Messica O (2007) Aged diabetic patients: Causes of hospitalization and possible prevention. Rev. Med. Int 28: 124
  12. Hotchkiss J, Davies C, Dundas R, Hawkins N, Jhund P, et al. (2014) Explaining trends in Scottish coronary heart disease mortality between 2000 and 2010 using IMPACTSEC model: retrospective analysis using routine data. BMJ 348: g1088.
  13. Orban J-C, Ichai C (2008) Acute metabolic complications of diabetes. Réanimation, Elsevier Masson 17: 761-767.
  14. Show. D, Diedhiou. SAR. A (2016) Mortality study of diabetics hospitalized at the medical clinics II of the Abass Ndao hospital center. Rev. Afr. End Metab Nut 2016: 2-45.
  15. Aouba A, Eb M, Rey G, Pavillon G, Jouglà E (2011) Mortality data in France: main causes of death in 2008 and changes since 2000. Bull Epidémiol Hebd 2011: 249-255.

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