**Epidemio-clinical profile and management of diabetes mellitus: case of the MEDICARE polyclinic.**

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**ABSTRACT**

Diabetes is a metabolic disease of multiple etiology characterized by chronic hyperglycaemia with disturbances in the metabolism of carbohydrates, lipids and proteins, due to a defect in the secretion of insulin, its action or the two mechanisms combined; it is an affection, frequent, recognized like a world epidemic. Methods: This is a cross-sectional descriptive observational study whose data collection was retrospective and prospective on a sample of 239 patients at the MEDICARE Polyclinic over a period of 3 years. Results: The results showed that the prevalence of diabetes mellitus was 8.5%. The most affected age group is between 42 and 46 years or 23.4% and with the average age 47.4 ± 10 years with a female predominance of 52.7% with 66.5% of diabetics who were married ; 47, 7% of diabetic patients had cardinal syndrome, 27.6% of patients with no signs and 17.6% of patients in a comatose state with cardinal signs. We observed that the most common diagnosis was unbalanced diabetes with a percentage of 43.9% and hyperosmolar coma 28.5%; 79.1% of our diabetic patients were type II and 20.9% of diabetics were type I. 55.6% of patients were on insulin therapy, 33.1% on ADO and 11.3% on insulin and ADO.

Keywords: Diabetes mellitus, Management, Epidemio-Clinical, Medicare

**INTRODUCTION**

Diabetes is one of the four priority non-communicable diseases (NCDs) identified by the WHO, alongside cardiovascular diseases (which cover heart attacks and strokes), cancer and chronic respiratory conditions. Recognized by the WHO as a global epidemic, diabetes is now inflicting a heavy burden on the already underprivileged health systems of low- and middle-income countries and could become the 7th leading cause of death worldwide. 2030 Indeed from the epidemiological point of view, according to the International Diabetes Federation, IDF in acronym, 382 million adults in the world would be suffering from diabetes in 2013. The number of men affected was around 14 million more than women, that is 198 million men against 184 million women. The majority of the 382 million adults affected would exist in the age group of 40 and 59 years. Type 2 diabetes mellitus remains the most common type in adults (Risasi, ER et al 2021). When it comes to children and young people, type 1 diabetes remains the most common form, just like in adults. The prevalence of type 1 diabetes is increasing worldwide. Europe alone has 24% of children with type 1 diabetes, closely followed by South-East Asia, which is home to 23% of the world's young people with type 1 diabetes, and America and the Caribbean, with 19% of cases (NDOUR, M. et al. 2011). Type 2 diabetes mellitus remains the most common type in adults (Risasi, ER et al 2021). When it comes to children and young people, type 1 diabetes remains the most common form, just like in adults. The prevalence of type 1 diabetes is increasing worldwide. Europe alone has 24% of children with type 1 diabetes, closely followed by South-East Asia, which is home to 23% of the world's young people with type 1 diabetes, and America and the Caribbean, with 19% of cases (NDOUR, M. et al. 2011). Type 2 diabetes mellitus remains the most common type in adults (Risasi, ER et al 2021). When it comes to children and young people, type 1 diabetes remains the most common form, just like in adults. The prevalence of type 1 diabetes is increasing worldwide. Europe alone has 24% of children with type 1 diabetes, closely followed by South-East Asia, which is home to 23% of the world's young people with type 1 diabetes, and America and the Caribbean, with 19% of cases (NDOUR, M. et al. 2011). The prevalence of type 1 diabetes is increasing worldwide. Europe alone has 24% of children with type 1 diabetes, closely followed by South-East Asia, which is home to 23% of the world's young people with type 1 diabetes, and America and the Caribbean, with 19% of cases (NDOUR, M. et al. 2011). The prevalence of type 1 diabetes is increasing worldwide. Europe alone has 24% of children with type 1 diabetes, closely followed by South-East Asia, which is home to 23% of the world's young people with type 1 diabetes, and America and the Caribbean, with 19% of cases (NDOUR, M. et al. 2011).

The lack of data in other regions of the world such as Africa makes it difficult to estimate type 1 diabetes mellitus. There are approximately 70,000 new cases of type 1 diabetes that are diagnosed each year in young people . The number of children with diabetes in 2013 would be 497,100 and whose age varies between 0 and 15 years.

Diabetes mellitus, being one of the major causes of morbidity and mortality, would have caused in 2013 in the world, the death of 5.1 million people according to the IDF. In 2015, the WHO states that there were 8% global mortality deaths. Diabetes is a veritable epidemic of the new millennium. The WHO estimates that the number of diabetics is 422 million (April 2014) and it should become one of the main causes of disability and death in the world within the next twenty-five years. It is a long-term, stable or progressive condition that requires an improvement in the quality of care for diabetics, while aiming for the "Doctor-Patient" relationship, the aim of which is to improve the quality of life of these patients (Karima ATTAR, 2017).

It is believed that every six seconds a person dies of diabetes. This disease causes at least 548 billion USD in 2013 for its prevention and treatment, thus representing a heavy economic burden for humanity.

The geographical distribution of diabetes mellitus in 2013, in terms of people affected, is as follows in descending order (millions of people): China (98.4), India (65.1), the United States United of America (24.4), Brazil (11.9), Russian Federation (10.9), Mexico (8.7), Indonesia (8.5), Germany (7 .6), Egypt (7.5) and Japan (7.2).

In Africa, faced with the evolution of the lifestyles of the inhabitants, in urban centers and even in rural areas, which unfortunately contrasts with the precarious budget of many countries of this continent, the responses against this new epidemic are very limited, as a consequence, diabetes mellitus is seeing its prevalence increase in these latter countries.

In this regard, Africa presents enormous difficulties in the diagnosis of diabetes mellitus, particularly type 1, for lack of competent personnel, for example; and when diagnosed, often an inaugural coma is indicative in a quarter of cases; the latter is sometimes confused with other causes of comas and only few children who suffer from it have the means to obtain insulin, syringes and monitoring equipment, to the point that most die. It should be noted, however, that type 2 diabetes is one whose progression is directly related to urbanization. Its occurrence is predominant in people over the age of 40.

As for its complications, Handicap International (2012) in its framework document on diabetes and other cardiovascular risk factors published in July 2012 considers diabetes mellitus to be a debilitating disease. It has a strong disabling potential, linked to daily symptoms, and to potential long-term complications such as: diabetic retinopathy (10% to 47% of diabetics), stroke (1% to 12% of diabetics), heart failure (1% to 43% of diabetics), renal failure (0.3% to 33% of diabetics), diabetic neuropathy (13% to 65% of diabetics).

In the Democratic Republic of Congo, according to the WHO (2006), the prevalence of diabetes mellitus varies approximately between 7% and 10%. During the tropical medicine congress held from September 30 to October 05, 2013 at the Félix Houphouët Boigny University on diabetes mellitus in sub-Saharan Africa, it was announced that the DRC has a prevalence of 14.5% for diabetes mellitus of kind 2.

In Africa, it is estimated that around 80% of people with diabetes are undiagnosed; in many countries, 5 to 10% of the health care budget is absorbed by diabetes and more than 50% of this expenditure is attributable to the complications of diabetes (IDF 2011).

A study, covering the period from January 2009 to June 2012, on the determinants of mortality among diabetic patients in the city of Kinshasa, carried out jointly by the general provincial reference hospital of Kinshasa and the Saint Joseph hospital indicated that the average age of the cases, on the day of death was 57.2 ± 10.3 years, the most affected age group was that of 50-59 years, the female sex was slightly predominant, i.e. 52.9% against 47.1% of men and 100% of deaths had presented complications, the most marked of which was diabetic feet, which represents 44%. Knowledge of the epidemiological and clinical profiles is sparse with regard to diabetes mellitus in the DRC.

It is in this order that the present study was conducted to determine the epidemioclinical profiles and management of diabetes mellitus in the city of Lubumbashi, in the DRC. The MEDICARE Polyclinic was chosen as the workplace. This work aims to study the epidemiological and clinical profile of diabetes mellitus in the city of Lubumbashi, in the DRC; Case of the Medicare Polyclinic.

**III.2 Methodology**

**III.2.1 Material and method**

1. **Type of study**

This work consisted of a cross-sectional descriptive observation study whose data collection was retrospective on patient records covering a sample of 239 patients during the period from January 1, 2019 to December 31, 2021. The Internal Medicine department of the MEDICARE Polyclinic served as the setting for this study. The MEDICARE Polyclinic is one of the largest hospitals in the City of Lubumbashi and has a capacity of 127 beds.

1. **Inclusion criteria:**

All patients whose diagnosis was inaugural during the period of our study; hospitalized in the medical department and who have been subjected to treatment that respects their intake with good follow-up.

1. **Exclusion criteria:**

Non-diabetic patients were not included in this study, Diabetic patients admitted to the service during the study period but whose records were incomplete and those who were not found in the service during the study period. our study.

1. **Variables collected**

* Age,
* Sex,
* Marital status,
* Occupation,
* Residential commune,
* clinical data,
* Biological data

**e. Sampling**

Our study involved a sample of 239 patients during the period from January 1, 2019 to December 31, 2021. We used epi-info software

**CHAPTER IV: PRESENTATION OF RESULTS**

**PREVALENCE**

During our research period from January 2019 to December 2021, therefore three years of study, we collected a number of 2817 cases in consultation in the internal medicine department of the MEDICARE VILLE hospital, including 239 cases of diabetes mellitus, i.e. a hospital prevalence of 8.5%.

**Figure 1 Hospital prevalence of diabetes mellitus**

|  |  |  |
| --- | --- | --- |
| **Pathologies** | **Effective** | **Percentage** |
| **Diabetes** | **239** | **8.5** |
| **Other Diseases** | **2578** | **91.5** |
| **Total** | **2817** | **100** |

This table offers a prevalence of 8.5% of cases of diabetes mellitus against 91.5% of other diseases.

**Figure 2 Distribution of cases by gender**

|  |  |  |
| --- | --- | --- |
| **Sex** | **Effective** | **Total** |
| **Feminine** | **126** | **52.7** |
| **Male** | **113** | **47.3** |
| **Total** | **239** | **100** |

**By observing this figure, we find that the female sex predominates with 52.7% over the male sex, i.e. 47.3% (sex ratio F/M=1.11 in favor of women.**

**Table I: Distribution of cases by year of discovery.**

|  |  |  |
| --- | --- | --- |
| **Year** | **Effective** | **Percentage** |
| **2019** | **63** | **26.4** |
| **2020** | **81** | **33.9** |
| **2021** | **95** | **39.7** |
| **Total** | **239** | **100** |

This table shows 39.7% of diabetic patients diagnosed in 2021; 33.9% in 2020 and 26.4% in 2019.

**Table II Distribution of diabetics according to marital status**

|  |  |  |
| --- | --- | --- |
| Marital status | Effective | % |
| Married | 159 | 66;5 |
| Single | 64 | 26.8 |
| Divorce | 5 | 2.1 |
| Widower | 11 | 4.6 |
| Total | **239** | **100** |

The table above shows that most diabetics were married, 66.5%, followed by single people with 26.8%.

**Table III Distribution of diabetics according to occupation**

|  |  |  |
| --- | --- | --- |
| Occupation | Effective | % |
| Liberal activities | 123 | 51.4 |
| Public sectors | 33 | 13.8 |
| Household | 74 | 31.0 |
| Unoccupied | 9 | 3.8 |
| Total | **239** | **100** |

In observance of this table, the majority of registered diabetics, ie 51.4%, were those who had liberal activities followed by housewives with 31.0%.

**Table IV Distribution of diabetics according to age**

|  |  |  |
| --- | --- | --- |
| Age range (year) | effective | % |
| [17-22[ | 4 | 1.7 |
| [22-27[ | 3 | 1.3 |
| [27-32[ | 7 | 2.9 |
| [32-37[ | 19 | 7.9 |
| [37-42[ | 30 | 12.6 |
| [42-47[ | 56 | 23.4 |
| [47-52[ | 44 | 18.4 |
| [52-57[ | 32 | 13.4 |
| [57-62[ | 23 | 9.6 |
| [62-67[ | 21 | 8.8 |
| Total | **239** | **100** |

This table shows us that the most affected age group is between 42 and 46 years old or 23.4% and with the average age 47.4 ±10 years. The extremes of age between 17 years and 66 years.

**Table V: Distribution of diabetic patients according to signs on admission**

|  |  |  |
| --- | --- | --- |
| **Clinical signs** | Workforce | Total |
| Cardinal syndrome | 114 | 47.7 |
| Cardinal syndrome + coma | 42 | 17.6 |
| Neuropathies | 8 | 3.3 |
| Asymptomatic | 66 | 27.6 |
| Others | 9 | 3.8 |
| Total | 239 | 100 |

The cardinal syndrome represents: polyuria, polydipsia, polyphagia, asthenia.

We observed 47.7% of diabetic patients presented with the cardinal syndrome (Polyuria, Polydipsia, Polyphagia and Asthenia), 27.6% of patients with no signs and 17.6% of patients in a comatose state with cardinal signs. .

**Table VI Distribution of diabetics according to diagnosis on arrival of the patient**

|  |  |  |
| --- | --- | --- |
| Diagnostic | Effective | % |
| Diabetes sugar imbalance | 105 | 43.9 |
| Diabetic ketoacidosis | 51 | 21.3 |
| Hyperosmolar coma | 68 | 28.5 |
| Others | 15 | 6.3 |
| Total | **239** | **100** |

This table tells us that 105 cases, or 43.9%, were diagnosed with unbalanced diabetes followed by hyperosmolar coma, or 28.5%.

**Table VII Breakdown of diabetics according to treatment**

|  |  |  |
| --- | --- | --- |
| Treatment | Effective | % |
| insulin therapy | 133 | 55.6 |
| teen | 79 | 33.1 |
| Teen + Insulin therapy | 27 | 11.3 |
| Total | **239** | **100** |

The table above shows us that 55.6% of diabetics were on insulin followed by ADOs with 33.1%.

**Table VIII Distribution of diabetics according to length of hospitalization**

|  |  |  |
| --- | --- | --- |
| Duration of hospitalization | Effective | % |
| 3-8 | 163 | 68.2 |
| 9-14 | 46 | 19.2 |
| 15-20 | 30 | 12.6 |
| Total | **239** | **100** |

In view of this table, hospitalized diabetics had a stay of 3-8 days, i.e. 68.2%. Average hospital stays were 9 days and extremes included 3-21 days.

**Table IX Distribution of cases according to type of diabetes Probable**

|  |  |  |
| --- | --- | --- |
| TYPE OF DIABETES | Effective | % |
| Type I or insulin-dependent diabetes mellitus | 50 | 20.9 |
| Type II or non-insulin dependent diabetes mellitus | 189 | 79.1 |
| Total | **239** | **100** |

In view of this table, we note a predominance of type II diabetes mellitus, i.e. 79.1%.

**Table X: Distribution of cases according to evolution**

|  |  |  |
| --- | --- | --- |
| Evolution | Effective | Percentage |
| Death | 18 | 7.5 |
| Healing | 221 | 92.5 |
| Total | 239 | 100 |

This Table shows us that 92.5% of the cases the evolution was good against 7.5% of death.

**DISCUSSION**

The study carried out made it possible to establish the epidemioclinical profiles and management of diabetes mellitus at the MEDICARE Polyclinic, in the City of Lubumbashi in the Democratic Republic of Congo. The following characteristics were studied: frequency of diabetes, most exposed sex, age group, BMI, type of diabetes, complaints on admission, risk factors for diabetes, rate blood sugar levels, complications and management.

1. **According to the years of discovery**

We observed 39.7% of diabetic patients diagnosed in 2021; 33.9% in 2020 and 26.4% in 2019. For 10 to 20 years, the phenomenon of globalization has also contributed to standardizing lifestyles on a model that promotes the increase in obesity and sedentary lifestyles. In this context, the incidence of diabetes is experiencing a strong increase in the countries of the world, even taking on epidemic proportions in certain developing countries, or in the underprivileged populations of certain industrialized countries. If nothing is implemented at the level of societies and their health systems to prevent the disease and its complications, the main responsible for its financial, social and human cost, diabetes could well become one of the major public health problems of the world. 21st century (Louis MONNIER 2014).

Amagara Domon TOGO 2010,in its retrospective and prospective descriptive study over a period of 10 years (from January 1999 to December 2008), allowed us to have the frequency of diabetes in children and adolescents aged under 20 with diabetes seen in outpatient or who have been hospitalized in the Internal Medicine department of the Point “G” National Hospital; from 1999 to 2008, the ferquence rose from 2.9% in 2000 to 20% in 2008. Diabetes is a reality in the face of this increase in the number of cases.

The increased prevalence of diabetes in our study and in those of the authors cited above was related to family history and obesity. This means that the genetic factor, followed by changes in lifestyle favor the occurrence of diabetes in the population (COULIBALY, 2010 and KITEAKOTEA, 2014).

According to the 2016 WHO World Diabetes Report, diabetes is gaining ground. The prevalence of diabetes, long the prerogative of wealthy countries, is steadily increasing everywhere, particularly in middle-income countries.

Globally, an estimated 422 million adults were living with diabetes in 2014, up from 108 million in 1980. The global prevalence of diabetes (age-standardized) has nearly doubled since 1980, from 4 .7 to 8.5% of the adult population. These figures reflect the increase in associated risk factors such as overweight and obesity. Over the past decade, the prevalence of diabetes has increased more rapidly in low- and middle-income countries than in high-income countries.

A study indicates that the global losses in GDP between 2010 and 2030 (Bloom DE 2011 and WHO 2016), including direct and indirect expenditure related to diabetes, will reach a total of US$ 1700 billion, of which US$ 900 billion in low-income countries high and US$ 800 billion in low- and middle-income countries.

1. **SEX**

The female sex predominates with 52.7% over the male sex, i.e. 47.3% (sex ratio F/M=1.11 in favor of women. Teke Bagambula in 2003 whose study population consists of 183 men (44.5 %) and 228 women (55.5%); KASIAM (2008) et al, report in their research on the prevalence and risk factors of diabetes mellitus that women were mostly affected compared to men, i.e. 5190 women against 4580 men According to the International Diabetes Federation, in its 6th edition of the 2013 Diabetes Atlas, the number of men affected was approximately 14 million more than women, or 198 million men compared to 184 million women in the world. In other countries, such as the USA, diabetes mellitus affects more men than women, ie 15.5 million men against 13.4 million women.We can deduce that diabetes spares no one, it affects both female and male sex.

1. **AGE**

The most affected age group is between 42 and 46 years or 23.4% and with the average age 47.4 ± 10 years. The extremes of age between 17 years and 66 years. Our results are similar to those of RISASI in his study conducted at the Provincial General Reference Hospital of KINSHASA on the epidemiological, clinical profile and risk factors of diabetes mellitus. (Risasi, ER et al 2021); type 2 diabetes was predominant with 41 patients. Type 1 diabetes was dominant in the age group > 40 years (41-51 years) with 56.0% and type 2 diabetes prevails in the age group 52-62 years (also > 40 years ) with 54%.

1. **COMPLAINTS AT ADMISSION**

We observed 47.7% of diabetic patients presented with the cardinal syndrome (Polyuria, Polydipsia, Polyphagia and Asthenia), 27.6% of patients with no signs and 17.6% of patients in a comatose state with cardinal signs. Our results are similar to those of RISASI in his study conducted at the Provincial General Reference Hospital of KINSHASA on the epidemiological, clinical profile and risk factors of diabetes mellitus. (Risasi, ER et al 2021) complaints on admission of diabetic patients were supported by the following cardinal signs of diabetes mellitus: polyuria, polydipsia, polyphagia, asthenia which accounted for a proportion of 44%, followed by wounds to the lower limbs 24% or 12 cases. The proportion of patients who had no complaints on admission was 18.0%.

1. **TYPE OF DIABETES**

In our study; we observed a predominance of type II diabetes mellitus, i.e. 79.1% against 20.9% of type 1 diabetes mellitus. Our results are similar to those of Risasi, in 2021 conducted in the City of KINSHASA 41 cases i.e. 82.0 % of patients suffered from type 2 diabetes against 9 cases or 18.0% of patients with type 1 diabetes. According to the international diabetes federation (DIONADJI, M et al. 2015), type 2 diabetes represents 85% at 95% of all diabetes cases in high income countries and possibly even more in low and middle income countries. We can conclude that our country is not spared from this upward trend of type 2 diabetes worldwide.

1. **SUPPORTED**

Diabetic patients cared for at the MEDICARE Polyclinic; 55.6% of diabetics were on insulin followed by oral antidiabetics (OAD) with 33.1% and OAD and insulin therapy 11.3%. The management in our study environment was first linked to the patient's admission table.DIALO. M et al report that the patients were treated with: diet (8%), ADO (58%), insulin (30%), insulin-ADO combination (6%). Daily treatment with ADO was: single dose (16.7%), 2 doses (55.6%) and 3 doses (27.8%). The insulin therapy regimen was 2 injections (77.8%) and 3 injections (22.2%) with 83.3% of patients independent for the injections; 86% of the patients were considered to be compliant with the treatment.We observed a cure rate of 92.5% and 7.5% of deaths.

**CONCLUSION**

This study was carried out in the women's and men's internal medicine department of the Medicare polyclinic on a sample of 239 diabetic patients. This is a cross-sectional descriptive observation study with retrospective and prospective data collection from January 2019 to December 2021

With the following objectives:

* To determine the hospital prevalence of diabetes mellitus at the Medicare polyclinic for a period of 3 years, i.e. from January 1, 2019 to December 31, 2021.
* To describe the socio-demographic profile of registered diabetics.
* Identify the support measures put in place.

The results showed that the prevalence of diabetes mellitus was 8.5%. The most affected age group is between 42 and 46 years old or 23.4% and with the average age 47.4 ± 10 years with a female predominance of 52.7% with 66.5% of diabetics who were married ; 47.7% of diabetic patients had the cardinal syndrome (Polyuria, Polydipsia, Polyphagia and Asthenia), 27.6% of patients with no signs and 17.6% of patients in a comatose state with cardinal signs. We observed that the most common diagnosis was unbalanced diabetes with a percentage of 43.9% and hyperosmolar coma 28.5%; 79.1% of our diabetic patients were type II and 20.9% of diabetics were type I. 55.6% of patients were on insulin therapy, 33.1% on ADO and 11.3% on insulin and ADO.

**RECOMMENDATIONS AND SUGGESTIONS**

Following the realities seen on the ground during the collection of data at the Medicare polyclinic, we suggest;

* **To the political-administrative authorities;**
* Strengthen the technical platform with the acquisition of modern diagnostic means,
* To have a spirit of solidarity in order to help diabetic patients by providing treatment at a lower cost, because it is a lifelong disease.
* To remunerate healthcare personnel well in order to allow them to serve the population in a normal way,
* Helping to popularize information to the population on diabetes mellitus
* **To the nursing staff;**
* We suggest that they be recycled at any time by training seminars in order to rehabilitate good care, to improve the state of health of diabetic patients,
* Carry out a thorough anamnesis and a good filling of the files on the state of health of diabetic patients;
* Demand better patient follow-up;
* To give the best of themselves to master the important notions on the management of diabetes mellitus, while avoiding the neglect of certain aspects.
* To put a policy of popularization of information on diabetes, starting with primary health care, in order to ensure a strong sensitization with insistence on educating the mass on diabetes, by restoring hope for life among diabetics known about the means of avoiding acute metabolic complications,
* Teach diabetics the risk factors and the first symptoms.
* **To the population ;**
* To balance the diet,
* Prioritize physical exercise
* Avoid a sedentary lifestyle, because diabetes remains a disease that can be treated but cannot be cured. It is therefore necessary to watch yourself, keep good eating habits, practice physical activity and take your treatment regularly. A diabetic can therefore be a healthy patient. Let us practice this because health is priceless;
* Join diabetes associations.

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