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# Proposal for an Educational Program on Non-Communicable Diseases: Diabetes Mellitus.

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**ABSTRACT**

Non-communicable diseases affect all socioeconomic groups, ages, sexes and are the leading cause of death worldwide, contributing to the increase in population aging. Education is at the center of the new trends and chronic diseases are preventable, being necessary health promotion and education programs. The present work was elaborated with the main objective of proposing an educational program on non-communicable diseases directed to patients and health personnel in patients with Diabetes Mellitus, in the "Health Surveillance Establishment" Center, in Kasabaholoweg in Suriname. A preliminary, qualitative-quantitative, descriptive and cross-sectional study is presented. For data collection, an interview was used, a documentary review and for information processing, the Excel 2013 program was used to identify the deficiency of knowledge that these patients had and to be able to carry out the proposed educational intervention. The interviews conducted reflected the patients' lack of knowledge of their pathology and how to prevent its complications. In the educational intervention, topics related to diabetes were addressed; nutrition, physical activities and adequate medical treatment, as well as hygiene and personal cleanliness in patients with this pathology, obtaining as results: in the pre intervention questions were asked to measure the level of knowledge of patients about their disease, in the post educational intervention a considerable increase in the level of knowledge acquired about self-care actions was observed in patients and health personnel, dynamics that were related to the pathology were addressed, to put into practice what was learned. The activity concluded with a reflection and a video on self-care in diabetes.

## 1. INTRODUCTION

Non-communicable or chronic diseases (NCDs) are long-lasting conditions with a generally slow progression; cardiovascular diseases, cancer, diabetes and chronic respiratory diseases are the leading cause of death, accounting for 74% of deaths worldwide. Diabetes is undoubtedly one of the most important health problems in the world.

Education is at the center of the new trends and chronic diseases are preventable. Health promotion and education programs are necessary to promote healthy lifestyles and prevent morbidity and mortality from these pathologies.

The present work was elaborated with the main objective of proposing an educational program on non-communicable diseases directed to patients and health personnel in patients with Diabetes Mellitus, in the Center "Health Surveillance Establishment", in Kasabaholoweg # 218 of the Paramaribo district in Suriname

## 2. MATERIALS AND METHODS

A preliminary, qualitative-quantitative, descriptive, cross-sectional study was carried out.

The sample was 62 patients with a confidence level of 90% and a margin of error of 10%. The sample was obtained by applying a total population statistical formula, with random sampling, all individuals in the population can be part of the sample and inclusion criteria were taken into account. All participants signed a written informed consent and the protocol was approved by the Ethics and Research Committees of the Health Services Health Surveillance Establishment Center.

**Inclusion criteria**

The following was taken into account:

- Diabetic patients being treated in the dispensing program at the Kasabaholoweg Health Surveillance Establishment Center # 218 in Paramaribo.

- Active in the chronic program.

- To provide informed consent.

The file review was very important, since it reflects the attendance to the medication control that these patients have and was necessary to corroborate the information about the medication that these patients expressed. In addition, it was possible to access the anthropometric measurements taken from the patients before a medical appointment, such as weight in kg and height in cm of the study patients.

For data collection, we used interviews, documentary review and for information processing, the Excel 2013 program; thus identifying the state of information that these patients had and being able to carry out the proposed educational intervention.

The pilot test with the interview instrument was carried out with the head doctor of the unit, in addition to the health personnel and two other resources for the respective correction of data, wording, clarity, coherence and relevance of the questions; in this way, the results sought in applying the instrument were obtained.

The fieldwork was conducted during the months of January to June 2023 at the Paramaribo Health Surveillance Establishment Center.

**Data collection methods.**

Authorization was requested to review the clinical records of the chronic patients, making 2 visits for two weeks in which a total of 167 records were reviewed, of which 105 were hypertensive patients and 62 coincided with the diabetic study patients chosen by the management, in addition, by means of a guided interview, real information was collected on the knowledge that the patients have about their pathology.

**Informed consent.**

A- Informed consent was requested from the medical director in order to obtain authorization from the general management of the center to carry out the research on the topic "Proposal for an educational program for patients with diabetes mellitus at the Health Surveillance Establishment Center.

B- It allowed the patient to obtain information regarding the research to be performed, which allowed him/her to accept or decline voluntarily the invitation to participate.[2]

C- Confidentiality and sensitive and non-sensitive information that may affect the patient's moral and social integrity is ensured.

**Information processing.**

A database was created in Excel 2013, with each of the survey variables, and then processed in tables and graphs, and the information was analyzed according to frequency and percentage.

**Variables under study:**

- Sociodemographic characteristics of the population to be studied.

- Level of knowledge of patients with diabetes mellitus and healthcare personnel about this chronic disease, as well as its treatment.

- Self-care actions performed by patients with Diabetes Mellitus.

- Educational intervention for diabetic patients and health personnel, according to the results found.

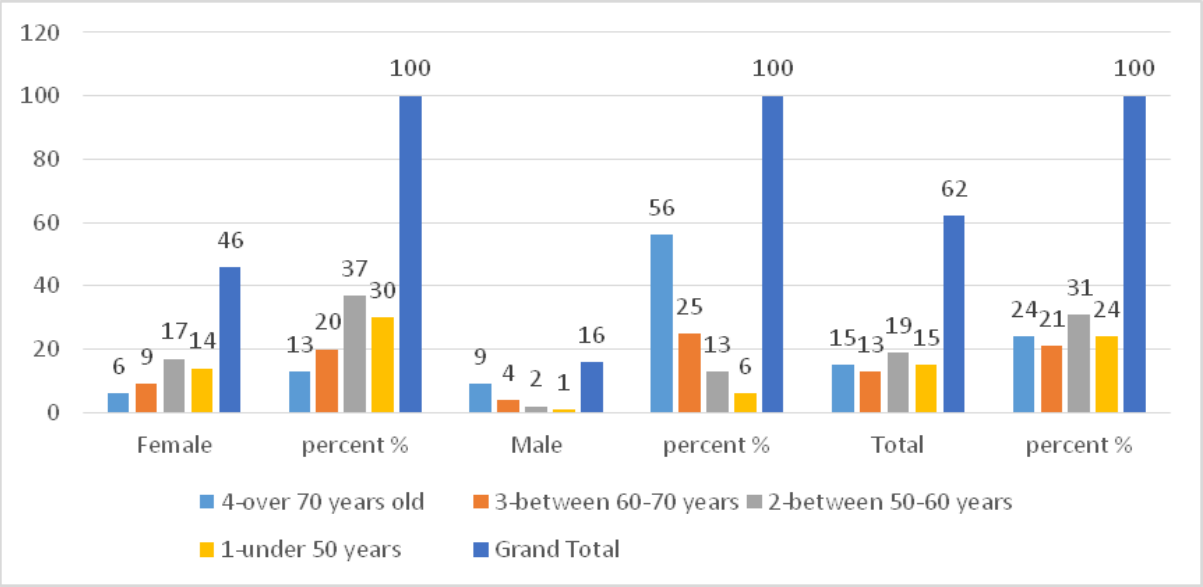
- Impact of the educational program on the lifestyles and level of knowledge of diabetic patients in the community and the health personnel who care for them.

- Strategy and educational activities aimed at diabetic patients and healthcare personnel with a view to healthy lifestyles.

## 3. RESULTS AND DISCUSSION

***Graph 1.***

Age and sex of patients with diabetes mellitus attending the "Health Surveillance Establishment" Paramaribo Center. I semester 2023




***Data source: Interview***

According to the interview conducted with the 62 patients under study at the Health Surveillance Establishment center, it was found that the female sex prevails with 46 patients for 74%, with 30% (14 patients) of the groups under 50 years of age, 37% (17) patients between 50 and 60 years of age, 20% (9) between 61 and 70 years of age and 13% (6) patients over 70 years of age of the study group.

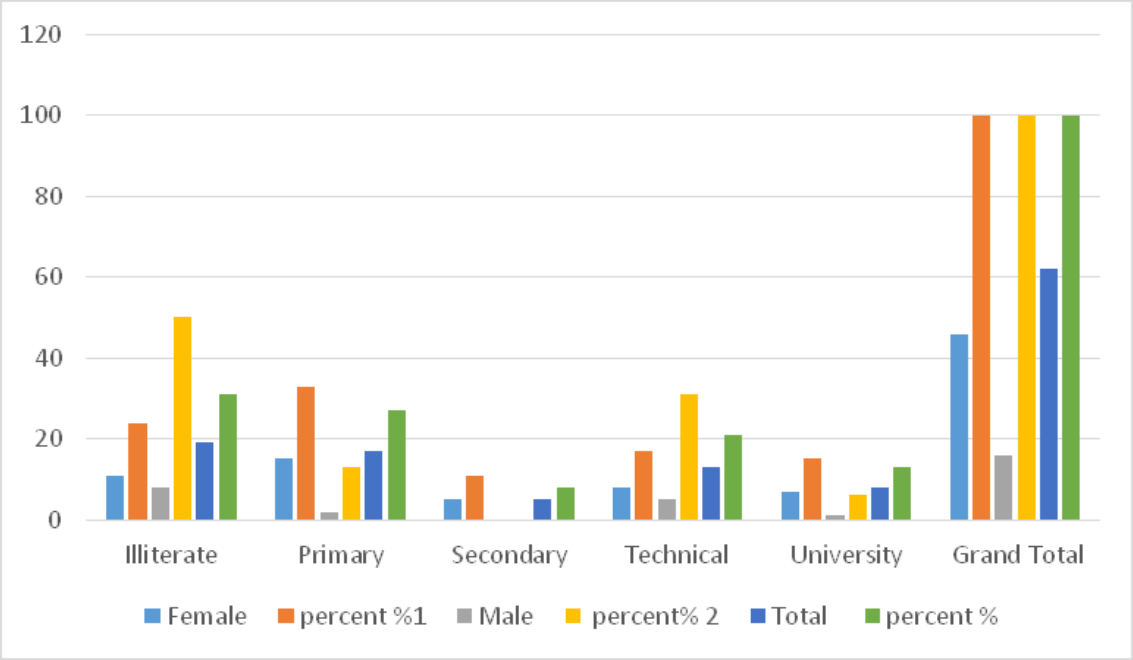
According to the male sex, the result was 26% with 16 patients, in the group younger than 50 years 6% (1 patient), between 50 - 60 years 13% (2 patients), between 61-70 years 25% (4 patients) and over 70 years 56% (9 patients), showing how this last group is more affected in the male sex.

A total of 24% of patients of both sexes under 50 years of age were affected, 31% between 50 and 60 years, 21% between 61-70 years and 24% over 70 years with a prevalence of the age group between 50 and 60 years, reflecting that this pathology is more affected in adulthood in general the range of our study patients is between 41 and 88 years.

With the data obtained, it is concluded that the results are related to the theory, since the female sex was the most affected in this study, identifying the aforementioned predisposing factors in this age group.

***Graph 2.***

Schooling and sex of patients with diabetes mellitus attending the "Health Surveillance Establishment" Center of Paramaribo. I semester 2023.




***Data source: Interview***

According to the schooling of the patients under study, the following results were obtained: for the female sex, the level of schooling was low, including 24% illiterate (11 patients), 33% primary (15 patients), followed by 13 patients with medium level of schooling, including 11% secondary (5 patients), 17% technical (8 patients) and 15% with a higher level of schooling (university); therefore, the low level of schooling prevails.

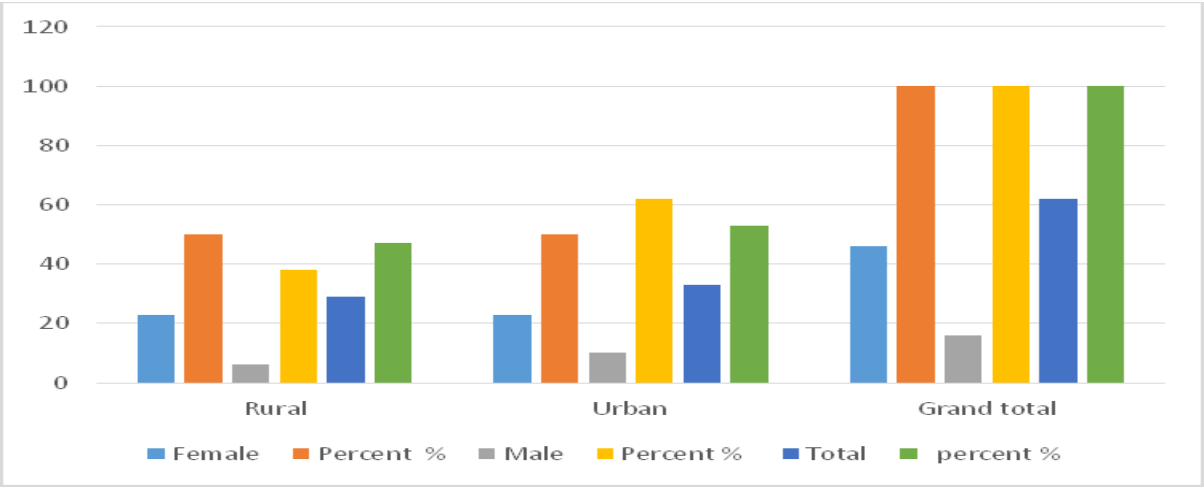
Of the total of 16 male patients, 50% had a low level of schooling; 8 patients were illiterate, 13% (2 patients) had primary education for a total of 10 patients, 31% of the group had technical education (5) and only 6% (1 patient) had a higher level of university education.

In general, 31% of both sexes had illiterate schooling, 27% at the primary level, 8% at the secondary level, 21% at the technical level and 13% at the university level, so that in the study population a low level of schooling prevails in both sexes affected

Schooling is the level of academic institution reached by people (illiteracy, primary, secondary, technical, university). According to theoretical data, the education of diabetic patients allows a better understanding and broader perception of their disease, which is of great importance for the development of their self-care. [2]

***Graph 3.***

Origin of patients with diabetes mellitus attending the Paramaribo" Health Surveillance Establishment" Center. I semester 2023



***Data source: Interview***

Results obtained from the interview with the patients under study show that 29 patients (47%) belong to the rural area. However, they have access to the health unit, either by selective urban transport, by car or on foot, in the case of the latter they have to walk for hours to get to the health unit, of which 50% corresponds to the female sex 23 of these patients and 38% to the male sex with only 6. The total of 33 patients for 53% belong to the urban area, where the health unit is located, being only a few minutes away from their homes; of which 50% belong to the female sex with 23 patients and 62% only 10 male patients of the study group.

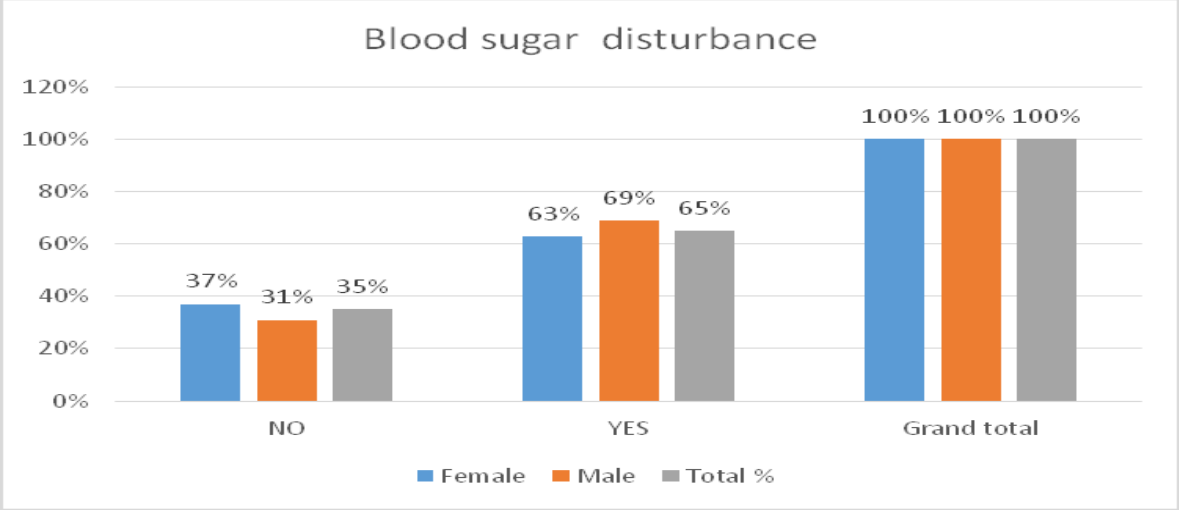
The more distant or inaccessible rural areas are considered a problem for people who seek health services. Generally, diabetic patients in rural areas have disadvantages in keeping their appointments for the withdrawal of their medication, and consequently this brings complications, since they suspend treatment and decompensate; distance being a determining factor in the complications of diabetes.[2]

According to the results of the interview, the table shows a higher percentage of patients from the urban area with 53% of the population under study and 47% from rural areas, where few belong to inaccessible places, but they report that this is not an obstacle for collecting their treatment at the health unit. Comparing the data obtained with the theory, it can be said that these patients do not present disadvantages for keeping appointments and collecting their medication, since they all have accessible means of transportation to this unit.

***Graph 4***

Knowledge (definition of diabetes) of the patients under study at the "Health Surveillance Establishment" Paramaribo Center. I semester 2023

According to the table of knowledge about diabetes mellitus of the patients under study, the 4 most frequent answers were used to identify the definition of diabetes that the patients have; resulting in the following values:

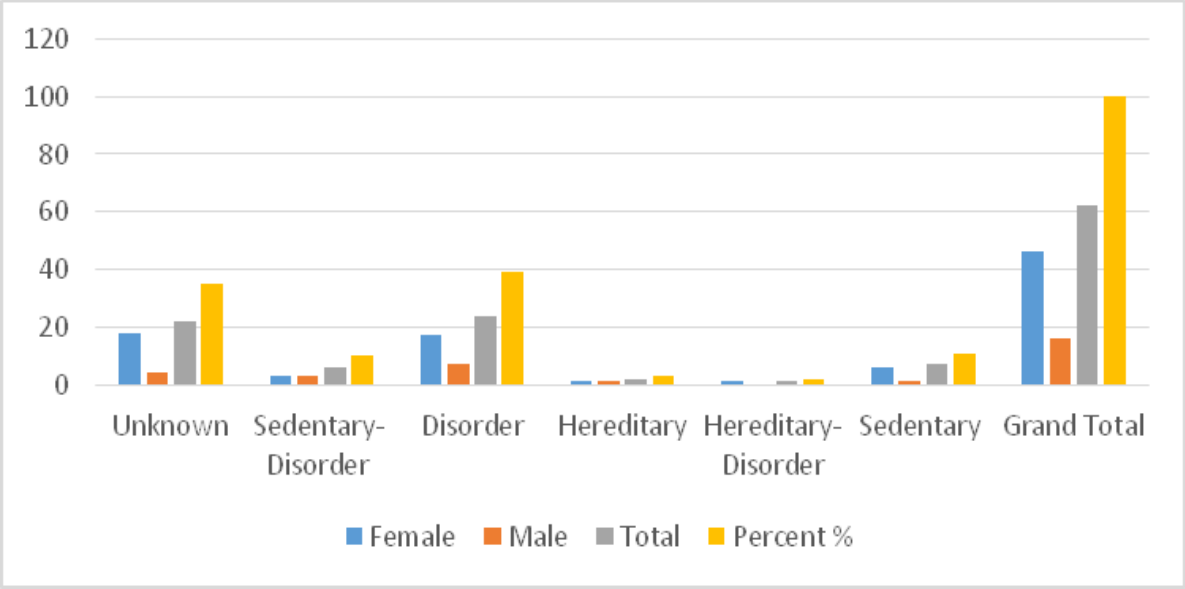



***Data source: Interview***

Male patients for 69% responded that diabetes is an alteration of sugar in the blood, and female patients for 63% gave the same answer for a total of 65% of both sexes. Thirty-one percent of men and 37% of women did not know, for a total of 35%, with men having more knowledge than women.

***Graph 5***

Knowledge (causes of diabetes) of the patients under study at the Center "Health Surveillance Establishment" Paramaribo. I semester 2023




***Data source: Interview***

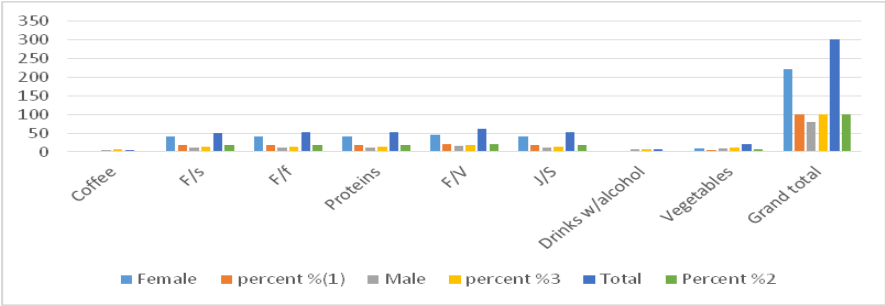
In the development of this variable, the following results were obtained according to the knowledge of the causes of diabetes that the 62 patients in the study have: 3% answered hereditary causes with one patient of each sex; 39% answered eating disorder with 17 female patients and 7 male patients. The 10% of the patients refer as the cause of diabetes the sedentary lifestyle plus the eating disorder with 3 patients in both sexes. The 11% corresponds to the cause of sedentary origin 6 female patients and 1 male; only 2% of the patients refer the hereditary cause with eating disorder. The causes of diabetes were unknown in 35% of the patients with a predominance of 18 females and 4 male patients.

In general, the results show that 3 % of the patients reported that the cause was hereditary, 39 % that it was caused by an eating disorder, and only 10 % mentioned sedentary lifestyle together with eating disorder as the cause, 11 % sedentary lifestyle, 2 % hereditary cause plus eating disorder and 35 % did not know, with a predominance of criteria referring to eating disorder and the lack of knowledge of the patients in the study.

The knowledge of patients with diabetes about their disease reduces its complications, therefore it is determined that knowledge is understood as facts or information acquired by human beings through experience, understanding and practice. The cause of diabetes is associated with eating disorders, sedentary lifestyle and in few occasions of hereditary origin. The results of the table show that most of the patients in the study answered due to eating disorder, but others did not know, so it is possible to associate this lack of knowledge to the little information provided by the health personnel, but in spite of this, of the 62 patients 24 answered knowing that diabetes is due to eating disorder and only 2 patients refer to hereditary origin; which means that most of them do have the necessary knowledge.

***Graph 6***

Diet and nutrition of patients with diabetes mellitus of the "Health Surveillance Establishment" Paramaribo Center. I semester 2023




**DATA SOURCE: INTERVIEW**

By means of the information gathered through the interview about the diet of these patients we obtained the following data, according to female sex 41 patients with (19 %) ingested proteins such as fish, chicken, meat or others ; 46 patients (21%) fruits and vegetables, but they ingest foods rich in carbohydrates (19%) of 41 patients with high fat content (A/g), juices and

soft drinks (J/R), (18%) of 40 patients reported ingesting foods with salt (A/s), 5% of 10 patients ingest vegetables and only 1 patient who consumes beverages with alcohol but none of them ingested coffee in this group. Although some patients ingest proteins, fruits, vegetables, vegetables there are carbohydrates in their diet that should be consumed in small portions and take care of fats, salt and sugar content that can affect the disease.

According to the male sex 11 patients (14%) ingest proteins, 19% of 15 patients ingest fruits and vegetables; foods rich in carbohydrates 14% of 11 patients with fat content, salt, juices soft drinks containing sugar, 12% of 10 patients ingest in their vegetable diet 7% of 6 patients consume drinks containing alcohol, being 6% of 5 patients who drink coffee; demonstrating the imbalance in the diet of patients.

In general, the results showed in the patients studied 17% of protein consumption, 20% of fruits and vegetables, 7% of vegetable consumption, carbohydrate-containing foods, although with the presence of fats, salt, sugars, 17% in each case, 2% of alcoholic beverages and coffee.

According to diabetic dietary theory, the diet should be low in carbohydrates; cereals and tubers, vegetables, fruits, vegetable fats, dry seeds, dairy products such as yogurt and dry cheeses, eggs, chicken and fish in small amounts, among others, are recommended. The patients do not have a diet established by the health personnel of the unit. Due to these results it can be mentioned that there is not an adequate food intake for patients to maintain an adequate state of health, there is not an adequate diet for their pathology and this leads to an increase in metabolic complications, but nevertheless they eat some of the things established by the diabetes care protocol.

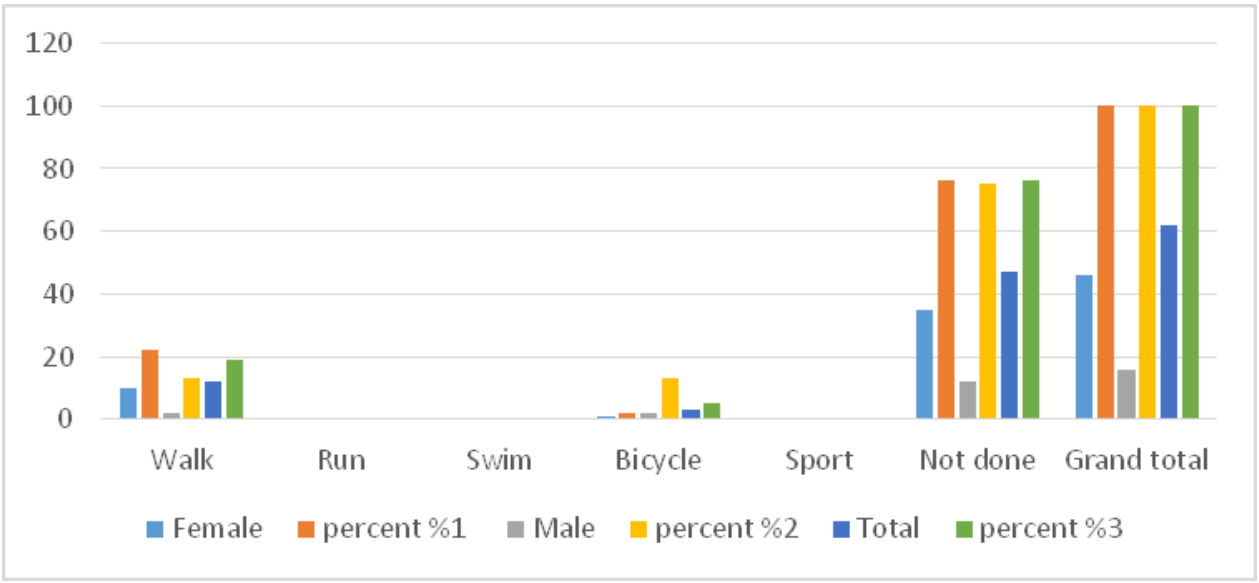
Some studies suggest that drinking coffee, whether caffeinated or decaffeinated, may actually reduce the risk of developing type 2 diabetes. But if you already have the disease, the impact of caffeine on insulin action may be associated with higher or lower blood sugar levels.35

As a consequence of the pandemic, poverty will affect 45.5 million more people in the region. It is clear that this situation, together with the disruption of supply chains and the increase in the prices of some foods, puts food and nutritional security at risk, especially for the poorest and most vulnerable households.

In the first instance, it would affect the quality of their diet, which would be made up of lower-cost foods that are less healthy and nutritious. In the most extreme cases, the quantity of food available to these households would be reduced. 3

***Graph 7***

Activity and exercise of patients with diabetes mellitus at the Paramaribo "Health Surveillance Establishment" Center. I semester 2023




***Data source: Interview***

By means of the most relevant results obtained in the table of activity and exercise of the patients, it was obtained that 35 female patients (76%) do not perform any type of exercise, 10 patients (22%) perform exercise such as walking, 2% use the bicycle and 12 male patients (75%) do not perform any type of activity and/or exercise, 13% of 2 patients walk and 2 use the bicycle; but none of the patients perform sports, running or swimming in their practices; they referred that they do not do it

because of time, arthritis, fatigue or age problems.

As a result 76% do not perform any exercise or physical activity, 19% those who walk and 5% those who use bicycles.

Physical activities are a fundamental pillar to achieve a good control of diabetes, it has been proven that regular physical activity can lower blood glucose levels, in addition to enhancing the effect caused by insulin. Exercising can also help to reduce cardiovascular risk factors and benefits the patient's self-esteem. It is concluded that patients need to improve their knowledge about the importance of physical activity for their own wellbeing, as well as about the types of exercises that should be performed depending on age and pathologies, since 76% of the total population in the study does not perform any type of exercise and are therefore prone to suffer potential problems.

**Educational intervention plan for patients with diabetes mellitus in the center "Health Surveillance Establishment" Paramaribo. I semester 2023**

| Content | Objetive | Method | Material | Participants | Dynamics | Time | Responsible |
|---|---|---|---|---|---|---|---|
| x What is the diabetes<br>x Signs and symptoms<br>x Importance of medicine | Know what diabetes is and how to avoid complications | Explanatory<br>Expository<br>Questions<br>Answers | Data Show<br>Markers<br>Flipcharts | Patients diabetics and health personnel | Ship | 45 min | |
| Foods that help to good functioning of the body and food prohibited in the patients with diabetes mellitus | Guide patients with diabetes what are the foods what they should consume and what they should not; in your daily diet | Explanatory<br>Expository | Data Show | Patients diabetics and health personnel | Sayings | 45 min | |
| | | | Refrigerio | | | | |
| Necessary physical activity patients should perform diabetics | Promote physical activity like daily routine to improve condition physical and avoid complications | Explanatory<br>Demonstrative | Data Show | Patients diabetics and health personnel | The canoe | 45 min | Drs:Waterberg Joy<br>Lic:Waterberg Ileana<br>Msc : Corella Sunilda |
| Hygiene and personal hygiene<br>» Bathroom<br>» Locker room<br>»Footwear<br>» nail cutting<br>» Use of shoes<br>» Use of creams, powders for feet | Improve hygienic conditions these patients using appropriate practices to avoid complications such as amputation of members | Explanatory | Data Show<br>Photos | Patients diabetics and health personnel | The box of the surprise | 45 min | |

## 4. CONCLUSIONS

The results obtained allow us to conclude that the low level of economic income and the level of access to the health unit, low literacy or lack of education, advanced age, sex, and low level of knowledge are detrimental to the empowerment about the disease and consequently about the prevention of chronic non-communicable diseases42 . The creation of educational programs that provide adequate training to the diabetic patient is a necessary strategy.