

Original Article

Observational study of twenty diabetic patients using the combination of "Diabetes free" and "Pancreas free", remedies from an Ivorian traditional healer

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ABSTRACT

As a response to the adverse effects and high cost of conventional anti-diabetic drugs, traditional medicine seems to be an alternative for local populations. The objective of this study was to carry out a biological and clinical follow-up of diabetic patients using the 'Diabetes free' and 'Pancreas free' combination remedies from an Ivorian traditional healer. A cross-sectional observational study was conducted on twenty (20) diabetic patients using the 'Diabetes free' and 'Pancreas free' combination remedies from August 2023 to February 2024. A questionnaire was filled in by volunteer patients. Weekly fasting capillary blood glucose levels were monitored. A clinical follow up was also used to identify adverse effects. Patients were 70% female and 30% male. 85% suffered from type 2 diabetes. Diabetes was a family trait in 70% of cases. Mean blood glucose at diagnosis was 2.20 ± 0.77 g/l. 'Diabetes Free' and 'Pancreas Free' are tablets made from medicinal plants. The dosage was one tablet (if blood glucose was between [1.26-1.60] g/l) or 2 tablets (if blood glucose was > 1.60 g/l), to be repeated once daily. A weekly mean reduction in blood glucose of 0.07 ± 0.03 g/l was observed. The mean blood glucose at week 12 was 0.92 ± 0.15 g/l. Adverse effects were characterized by anorexia (55%), dizziness (60%) and digestive disorders (20%). 'Diabetes Free' and 'Pancreas Free' could significantly help in reducing glycaemia, with adverse effects at beginning of treatment. However, further studies need to be done.

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Introduction

Diabetes is a chronic sickness that occurs when the pancreas does not produce enough insulin or when the body is unable to effectively use the insulin it produces.

This causes an excessive concentration of glucose in blood, known as hyperglycemia [1]. In just few years, diabetes has become an epidemic that constantly go beyond the predictions of specialists. According to the International Diabetes Federation (IDF), in 2021, about 10% of adults worldwide or a total of 537 million people had diabetes [2].

According to these statistics, South-East Asia and the Western Pacific account for almost half of all cases of diabetes worldwide. This steady increase in the number of people with diabetes over recent decades is due to demographic growth, an aging population and an increase in the prevalence of diabetes in all age groups [3]. The African region is no exception to this disease, with the example of Côte d'Ivoire where the prevalence of diabetes in 2017 was 4.8%, affecting 700,000 people [4].

The main drugs used to treat diabetes are from different pharmacological classes, which can sometimes have adverse effects, such as heart failure with glitazones and gliptins [5, 6], excessive weight gain with insulin [7] or a significant drop in blood glucose levels observed with hypoglycaemic sulphonamides and insulin [8], which are very costly.

This leads people with diabetes to seek for other therapies, such as traditional medicine, which uses natural bioactive substances, mainly of plant origin. Traditional medicine has therefore become an alternative, particularly for people with low incomes. For centuries, traditional medicine has provided Africans with safe, acceptable and inexpensive healthcare. Today, 80% of the African population relies on traditional medicine for their primary healthcare [9].

A remedy developed by an Ivorian traditional healer is used by the people of that country. It is a combination of two (2) remedies known as 'Diabetes free' and 'Pancreas free'.

The objective of this study was to carry out a biological and clinical follow up of diabetic patients using the combination of 'Diabetes free' and 'Pancreas free' from an Ivorian traditional healer.

Material

Study population

It was a cross-sectional observational study conducted between August 2023 and February 2024.

The study population involved patients attending the traditional healer's office for diabetes. A sampling was used to recruit twenty (20) patients for the study period.

These patients knew the traditional healer's office by word of mouth through a relative or through a testimony of a third party who had already used its products. The study included all kind of patients over 15 of age, with a baseline fasting blood glucose level greater than or equal to 1.26 g/l or more, controlled twice, and who agreed to take the remedy for diabetes by informed consent.

Devices

Various devices were used in this study: Glucometer (On Call Extra type); Test strips (On Call Extra type); Clean gloves; Needles.

Survey forms

Patients were asked a series of questions about their Socio-professional information, dietary habits, physical exercises, history (family, medical and medication), taking of treatment, monitoring of blood glucose levels, and the observed adverse effects.

Methods

The series of questions intended for voluntary patients was filled in during an interview.

The socio-professional questionnaire helped to collect data on the gender, age, occupation and marital status of each patient. Weight and height were used to calculate body mass index (BMI) using the following formula: weight/height^2 (in kg/m²) [10].

The questionnaire dealing with food diet focused on the choices and behaviours of each patient such as: meal frequency, time of evening meal, food preferences and types of food taken, type of drink and meals taken outside home.

The questionnaire on physical exercises covered all forms of physical exercises, as well as the frequency, duration and management of blood glucose levels during physical exercises.

Questions about the patient's history (family, medical and medication) were used to identify genetic risk factors, the duration of the disease, previous treatments and whether the patient suffered from any other disease.

Since patients had already been diagnosed with diabetes before coming to the traditional healer's office, they orally told us about the type of diabetes they are suffering from.

Questions about the observance of the traditional healer's treatment were focused on how they regularly

took their medication and why did they stop it. The Observance of treatment was sought.

Blood glucose monitoring was done by measuring fasting blood glucose levels weekly for three months. Blood glucose levels were measured using a hand-held glucometer on capillary blood obtained by pricking a fingertip, in fasting patients, some at the practitioner's office and the others at home.

Questions on observed adverse effects were linked to negative reactions or adverse symptoms occurring in patient after taking the traditional healer's products.

The choice of a three-month glycaemic monitoring was based on physiological, clinical and practical considerations, allowing an accurate and stable assessment of diabetes management and facilitating the required therapeutic adjustments. In addition, the duration of treatment recommended by the traditional healer was three (3) months.

Data processing

Results were presented as means and percentages. The XLSTAT software version - 2023.3.1 was used. The t-Student test was used to compare means of blood glucose levels on a matched sample. The level of significance was 5% and the difference was significant when $t > 2.093$.

Ethical considerations

An oral and written explanations related to the interest and conduct of the survey were given to patients. Volunteers who agreed to participate to the study signed an authorisation form for the blood glucose tests to be performed and for the data to be used by the investigator.

The data were collected confidentially and anonymously.

Results

Composition of remedies

Following the investigations, only a partial composition of 'Diabetes free' and 'Pancreas free' was provided by the traditional healer in order to protect his recipe. For instance,

- 'Diabetes free' is made up of 6 plants, such as garlic clove (*Allium sativum*) and cinnamon bark (*Cinnamomum verum*);

- 'Pancreas free' is made up of 4 plants, namely ginseng root bark (*Panax ginseng*) and Gurmar leaves (*Gymnema sylvestre*).

Socio-demographic characteristics

Patients in the study were 70% female and 30% male, with a sex ratio (F/M) of 2.33. They were heterogeneously distributed across the adult age groups, with a minimum of 28 years and a maximum of 107 years. 65% were overweight or in a state of obesity. 55% had a low standard of living (retired or unemployed).

Food diet and physical activities

95% of patients took three (3) meals a day. 70% (14/20) took their evening meal between 6pm and 8pm. 60% did not consume sugars. 55% did not consumed fats in their diet. 80% (16/20) drank only water. The vast majority of patients (80%) take their meals at home.

60% of patients did not do any physical activity.

Medical history

Fourteen (14) patients (70%) had family members who had also been diagnosed with diabetes.

Diagnosis

The diagnosis was done by measuring fasting blood glucose levels greater than or equal to 1.26 g/l, checked on two occasions.

Type of diabetes

85% of diabetic patients had type 2 diabetes.

Baseline blood glucose

All patients were identified as diabetic (fasting blood glucose level greater than 1.26 g/l) with a mean blood glucose level of 2.20 ± 0.77 g/l (minimum: 1.30 g/l; maximum: 3.50 g/l).

Observance of treatment

Dosage was estimated according to patients' blood glucose levels. One tablet was given to patients with blood glucose levels ranging between 1.26 and 1.60 g/l and 2 tablets for blood glucose levels greater than 1.60 g/l, repeated once daily.

No special food diet was suggested to patients, although excess was prohibited.

85% of patients took their treatment.

Blood glucose monitoring

The mean blood glucose levels during weekly monitoring of patients treated with 'Diabète free' and 'Pancreas free' are shown in Figure 1. A mean weekly reduction in blood glucose level of $0.07 \pm 0.03 \text{g/l}$ was observed. The mean blood glucose level at week 12 was $0.92 \pm 0.15 \text{g/l}$.

The mean blood glucose levels at different follow-up weeks were statistically significant compared to diagnosis ($t_{\text{cal}} > 2,093$).

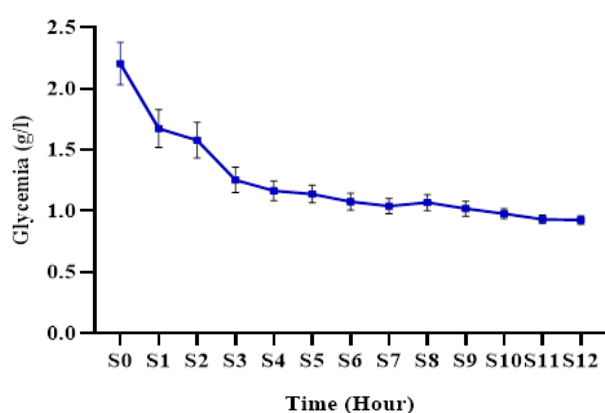


Figure 1: Trends of patients' blood glucose levels

Adverse effects

Adverse effects reported by patients are shown in figure 2. Adverse effects were characterised by anorexia (55%), dizziness (60%), hunger (30%) and digestive disorders (20%).

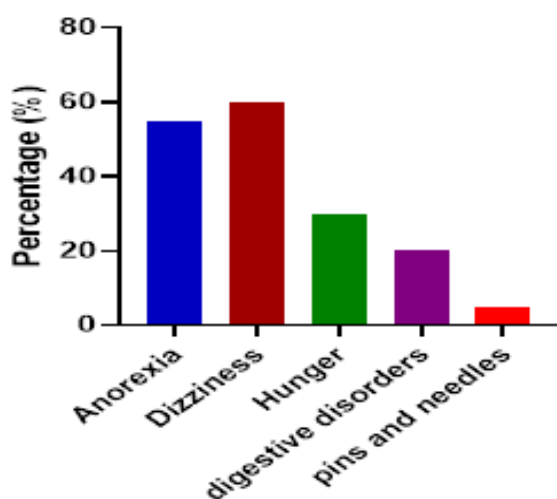


Figure 2: Distribution of adverse effects by patient

Discussion

An observational study was conducted on twenty (20) patients using "Diabetes free" and "Pancreas free," remedies from an Ivorian traditional healer. This research revealed a female predominance with a sex ratio (F/H) = 2.33 among overweight diabetic adults facing unfavourable socio-professional conditions. This female predominance might be attributed to the higher frequency of obesity in females than in males in Côte d'Ivoire [11].

These results showed that 60% of patients did not practice any physical activities. These results could be similar to those of Magroun et al. Who during a diabetes mellitus screening test at workplace, showed that 74% of patients did not engage in any physical activity [12]. This high rate of patients not participating in sport could be due to occupational or family commitments. lack of motivation due to ignorance of health benefits provided by sport.

Concerning the family medical history, 70% of diabetic patients in this study had family members diagnosed with diabetes. These results are identical to those of Belhadj et al., who, during a survey in Algeria on the management of diabetics, found that 63% of patients had medical history of diabetes [13].

This majority of patients with a family medical history of diabetes could be explained by the fact that diabetes has a strong genetic component, with a significant hereditary predisposition [14, 15].

The majority of patients (85%) had type 2 diabetes. these results are similar to those of Ndour et al. with 95.7% of patients with type 2 diabetes [16] and Farouqi et al. with 70.31% of patients with type 2 diabetes [17]. This high prevalence of type 2 diabetes in diabetic populations could be explained by the fact that type 2 diabetes is the most common type of diabetes [18] due to lifestyle factors such as unhealthy diet, lack of exercise and obesity.

In terms of treatment observance, this study showed that 85% of patients took the treatment properly. These results are similar to the 68.7% reported by Achouri et al. in Algeria in 2017 [19]. This could be explained by a good level of observance and cooperation of patients with their treatment plan and good confidence in the treatment given by the traditional healer.

As for the effect of the remedy on hyperglycaemia, this work revealed a significant reduction in glycaemia from the first week of treatment and an improvement in glycaemia in patients treated by a weekly mean

reduction in glycaemia of 0.07 ± 0.03 g/l. N'guessan-Irié et al., in an ethnopharmacological investigation of "Sarenta," a traditional herbal remedy, had almost similar results. They recorded a weekly mean reduction of 0,058 g/l [20]. An observational survey of 98 patients in China, using traditional Chinese medicines, also showed a significant decrease in fasting and postprandial glucose levels [21].

In addition, previous studies showed that some components of the remedies had anti-diabetic activity: a methanolic leaf extract of *Gymnema sylvestre* (gurmar) exhibited an anti-diabetic activity by stimulating the regeneration of beta cells in treated rats [22]. Another study linked to cinnamon showed that 3g of *Cinnamomum verum* (cinnamon) in the form of infusion administered for 15 days to diabetic patients reduced blood glucose in type 2 diabetics [23]. A study has also shown that silver nanoparticles synthesised from *Allium sativum* (garlic) had significant anti-diabetic activity in terms of reducing hyperglycaemia by increasing the use of glucose, reducing hepatic glucose production and inhibiting enzymes such as α -amylase and α -glucosidase [24].

As for the adverse effects of the 'Diabetes free' and 'Pancreas free' combination, more than 50% of patients showed signs of hypoglycaemia such as anorexia and dizziness at the beginning of treatment. Hypoglycaemia had already been observed following administration of high doses of gurmar during acute toxicity tests in rats [25, 26].

Also, 20% of patients experienced digestive disorders such as bloating and nausea after taking the medication. This could be due to the presence of garlic in the formula. Garlic is known to have gastrointestinal side effects like nausea and bloating [27].

Conclusion

'Diabetes Free' and "Pancreas Free", herbal remedies developed by an Ivorian traditional healer, are used in combination as anti-diabetic agents.

The general aim of this study was to carry out a biological and clinical monitoring of diabetic patients using the 'Diabetes free' and 'Pancreas free' combination remedy. At the end of investigations, it was noticed that the combination of 'Diabetes free' and 'Pancreas free' helped to significantly reduced glycaemia from the first week of treatment. The adverse effects are characterized by hypoglycaemia at the beginning of treatment.

Traditional remedies provide advantages such as reduced cost and proven beneficial effects but carry risks of interactions and variable dosage. A cautious and controlled use is therefore needed.

The results of this study are encouraging for a more effective management of diabetes by traditional medicine. However, further studies concerning toxicity tests should be performed to ensure the safety of these remedies.

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Conflict of Interest

None declared.

Author Contributions

All the authors contributed to the study.

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