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# The Impact of Functional Insulin Therapy on the Psychological Aspect of Type Diabetics

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**Abstract** **Original Research Article**

Functional insulin therapy is an educational method that is part of a strategy to intensify type 1 diabetes in order to optimize the balance of diabetes while improving the psychological aspect of the patient. ***The Aim:*** of this study is to assess the impact of functional insulin therapy on the psychological aspect of type 1 diabetics. ***Patients and Methods:*** This is a retrospective and analytical descriptive study, conducted from March 2019 to August 2019, we included 20 type 1 diabetic patients who benefited from a functional insulin therapy education program and an evaluation of the psychological impact made by a questionnaire and a psychological interview. ***Results:*** Out of a total number of 20 patients benefited from education between March 2019 to August 2019: 6 men, 14 women, average age of 20 years, average duration of diabetes of 8 years, 80% are students. Functional insulin therapy is used exclusively in all patients. The questionnaire shows an improvement in the perception of the impact of diabetes in (66%), there is a decrease in anxiety in (75%), With 16 patients or (80%) declaring satisfaction with the method, 12 patients either (60%) declared an acceptance of the treatment, 14 patients or (70%) reported more autonomy and self-management, 8 patients or (40%) reported an improvement in their socio-professional relations, The doctor-patient relationship is improved in (90%) of patients. According to the open questions, functional insulin therapy brings better control of diabetes and food freedom. The difficulties mainly felt are the calculation of the quantities of carbohydrates, the economic constraint: the cost of the insulin pens and capillary blood glucose strips and the multiple injections: more than four times a day and self- monitoring six times a day. ***Conclusion*:** The results suggest that learning functional insulin therapy improves the psychological aspect of type 1 diabetics through better control of the disease.

**Keywords:** Functional insulin therapy, diabetics, doctor-patient relationship, psychological interview.



## INTRODUCTION

Type 1 diabetes can cause significant psychological difficulties for the patient and their family members. It impairs quality of life and is a risk factor for distress and psychiatric disorders related to diabetes [1-3]. Challenges associated with a diagnosis of diabetes include coping with the presence of the disease, medication adherence, and psychological issues (personal and interpersonal) [4-6].

Stress, lack of social support and a negative attitude towards diabetes can have a detrimental effect on self- care and glycemic control [7-8]. Ideally, diabetes management strategies include approaches that focus on the psychosocial implications for the patient and their family.

Functional insulin therapy is an educational method that is part of a therapeutic intensification strategy for type 1 diabetes, it has three main objectives [9]:

- Improve the quality of life, thanks to food freedom, both in terms of quantity, quality and schedule, getting as close as possible to the flexibility of meals for non-diabetics.
- Empower patients in the management of their pathology.
- Improve glycemic balance (HbA1c < 7%), thus limiting the occurrence of late complications of diabetes, while avoiding hypoglycaemia.

These objectives impose certain constraints such as the regular performance of self-monitoring of blood sugar (4 to 6 per day), insulin therapy of the Basal-Bolus type.

Our work makes it possible to evaluate the impact of functional insulin therapy on the psychological aspect of type 1 diabetics and to analyze the results obtained over a period of 6 months. About a sample of 20 patients hospitalized and followed in the endocrinology-diabetology and metabolic diseases department at the ERRAZI hospital - CHU Mohamed VI in Marrakech between March 2019 and August 2019.

## PATIENTS AND METHODS

We carried out a retrospective and analytical descriptive study, spanning six months, conducted from March 2019 to August 2019. It consisted in evaluating the impact of functional insulin therapy on the psychological aspect of type 1 diabetics.

Among 70 patients who are on functional insulin therapy, a sample of 20 T1D patients was studied. Patients benefited for 4 days from optimized care including both therapeutic modifications (adjustment and calculation of insulin doses), dietary workshops and workshops around the theme of diabetes, and functional insulin therapy.

The inclusion and exclusion criteria are as follows:

✓ **Inclusion Criteria**
- Patients aged 13 and over.
- Patients on basal bolus.

✓ **Exclusion Criteria**
- Eating behavior disorder: Bulimia – Anorexia.
- Patients refusing to participate.

The psychological impact is assessed using two methods: the psychological interview (qualitative assessment) and a questionnaire (quantitative assessment) made up of two parts:

✓ **The first part contains data:**
- Socio-demographic: age, sex, level of study.
- Clinical: duration of diabetes, type of pattern insulin.
- Free questions on the advantages, disadvantages, degree of practice of insulin therapy functional and the difficulties experienced.

✓ **The second part contains questions on:**
- Satisfaction with the method.
- Socio-professional relations.
- Perception of the impact of diabetes.
- Anxiety.
- Acceptance of treatment.
- Autonomy and self-management.
- Doctor-patient relationship.

Prior consent of the patient for the participation in the study is requested.

## RESULTS

Out of a total number of 20 patients benefited from education between March 2019 and August 2019: 6 men, 14 women, average age of 20 years, average duration of diabetes of 8 years, 80% are students. Functional insulin therapy is used exclusively in all patients. The questionnaire shows an improvement in the perception of the impact of diabetes in (66%), there is a reduction in anxiety in (75%), With 16 patients (80%) declaring satisfaction with the method, 12 patients (60%) declared an acceptance of the treatment, 14 patients (70%) reported more autonomy and self-management, 8 patients (40%) reported an improvement in their socio-professional relations, The doctor-patient relationship is improved in (90%) of patients. According to the free questions, functional insulin therapy brings better control of diabetes and food freedom. The main difficulties felt are the calculation of the quantities of carbohydrates, the economic constraint: the cost of insulin pens and blood glucose test strips and the multiple injections: more than four times a day and self-monitoring six times a day.

## DISCUSSION

A chronic pathology such as type 1 diabetes can alter the psychological state which includes the spiritual life of the individual (i.e. reflection, thought, mediation, artistic satisfactions, prayer ...), mood (depression, anxiety), cognitive performance (memory, concentration) and the feeling of well-being [10].

In this chapter, we will detail and discuss the impact of functional insulin therapy on the psychological aspect of type 1 diabetes.

In our study, we observe an improvement in the perception of the impact of diabetes. It is the same results in the literature [11-13].

The place of stress and anxiety in type 1 diabetes has been highlighted by several studies [14, 15]. They show that type A personalities have more difficulty maintaining glycemic balance compared to type B personalities. For Bruchon-Schweitzer [16], active coping as a personality trait represents a resilience factor in chronic disease and type 1 diabetes. Resilience appears to be promoted by an internal locus of control.

In the option of functional insulin therapy, where the subject becomes his own doctor; it seems necessary to take into consideration the dispositional (personality trait, type A, etc.) and dynamic factors of his personality (coping strategies, alexithymia, anhedonia, self-esteem, etc.).

The evaluation of anxiety after FI is generally in favor of a decrease [11-13, 17-19]. Our work joins

the data of these studies by clearly showing a decrease in anxiety in (60%) diabetics.

The majority of studies [12, 13, 17, 20, 21] confirm satisfaction with the method and acceptance of the treatment. Our results are relatively close to those of the literature.

Empowerment is an important factor in the success of the therapeutic education program in functional insulin therapy [22]. The degree of autonomy of the patient is often such that some doctors, such as Dr. Berger in Basel, have included a teaching chapter entitled "Why should you continue to see your diabetologist regularly? » [23].

In the study by Graune *et al.*, [13], carried out in 2012, showed a significant improvement in autonomy and self-management after functional insulin therapy. As well in the study by Langewitz *et al.*, [19], 52% of patients report an improvement in autonomy. Our results agree with those of the literature.

Among the 20 patients concerned, only 40% reported an improvement in their socio-professional relations, according to the questionnaire most diabetics have good socio-professional relations before functional insulin therapy. The study by Graune *et al.*, [13] also showed a non-significant improvement in socio-professional relations.

Most of the studies [12, 13, 19] that have evaluated the impact of functional insulin therapy on the doctor- patient relationship have shown a marked improvement in this relationship. Our results are similar to those in the literature.

Despite the constraining nature of carbohydrate calculation, functional insulin therapy provides better control of diabetes and flexibility in treatment [11].

In the literature, the favorable impact expressed by patients essentially relates to food freedom [11, 12, 19, 21-24]. The results of our series point in the same direction. The difficulties mainly felt in our patients are: the calculation of the quantities of carbohydrates similar to the results of S. Reffet [11] and the economic constraint which was reported in the study by Graune *et al.*, [13].

## CONCLUSION

Type 1 diabetes is experienced on a daily basis, affects all social backgrounds and spares no area of the world of patients. Its impact is of such magnitude that it affects the patient on the physical level as well as on the psychic and emotional levels.

The concept of functional insulin therapy has been developed since 1983. It facilitates the educational approach to insulin therapy in type 1 diabetes. It consists of separating basic insulin needs from prandial insulin needs through experimental workshops.

The practice of functional insulin therapy involves therapeutic patient education, daily glycemic control and four to six insulin injections per day. However, it is essential to adapt this concept to the desires of responsibility and autonomy of patients.

Our study demonstrates that functional insulin therapy has a positive impact on the psychological aspect of type 1 diabetics, while offering glycemic balance, food freedom and greater autonomy.

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