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# Management of Type 1 Diabetes in Children Outside of Insulin Therapy: Knowledge and Attitudes

*Djibril Boiro[1], Modou Gueye[1], Papa Moctar Faye[2], Amadou Sow[1]*, Babacar Niang[2], Aminata Mbaye[2], Dominique Larissa Antsue[1], Aliou Abdoulaye Ndongo[1], Aliou Thiongane[2], Ndeye Maimouna Ndour Mbaye[3] and Amadou Lane Fall[2]*

[1]Department of Pediatrics, Abass Ndao Hospital Center, Senegal

[2]Department of Pediatrics, Albert Royer National Children's Hospital, Senegal

[3]Department of Internal Medicine, National Center for Diabetology Mark Sankale, Senegal

## Abstract

**Introduction:** Type 1 Diabetes (T1D) is a chronic condition with serious repercussions on the quality of life of children and their families. Insulin therapy and therapeutic education help reduce complications. The aim of the work was to assess practitioners' knowledge of therapeutic education in order to propose recommendations for improving management.

**Methodology:** This was a month long survey involving all providers working in reference centers for the management of diabetes.

**Results:** We interviewed 92 healthcare professionals. This was 43.5% (40) DES in pediatrics; 46.7% (43) of students on clinical placements and 6.5% (6) of pediatricians. Among them 64.1% (59) had not received training in diabetology. They recommended a restrictive diet in 35.9% (33) of the cases, including 2.2% (2) of pediatricians; 2.2% (2) diabetic educators and 16.3% (15) of trainees. According to 7.6% of providers, the main targets for therapeutic education were single parents. Among the providers, 23% thought it unnecessary to adapt the treatment according to sports or recreational activities. Sports were banned according to 9% of providers and for 10% the presence of a psychologist is useless in care.

**Conclusion:** Improving the quality of treatment for T1D requires initial and continuous training of health professionals and the implementation of standardized protocols in the various health facilities to avoid certain errors in treatment.

**Keywords: Diabetes; Children; Therapeutic education; Providers**

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***Correspondence:***
*Amadou Sow, Department of Pediatrics, Cheikh Anta Diop University, Abass Ndao Hospital Center, Dakar, Senegal, Tel: +221 77 269 01 11; E-mail: amadousoow@hotmail.com*

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## Introduction

Type 1 Diabetes (T1D) is the most common endocrinopathy in children. It is a chronic pathology with serious repercussions both on the quality of life of the child and his family [1]. According to the international federation of diabetes in addition to insulin therapy, Therapeutic Education (ETP) is fundamental and constitutes the key to success in the management charge [2]. The objective of this work was to assess the knowledge and attitudes of health professionals with regard to nutritional care, management of physical activities, therapeutic education and the importance of psychosocial support.

## Methodology

It was a prospective, multicenter survey carried out from April 3 to May 10, 2018 in six level III health facilities in the national health pyramid. These were: The Abass Ndao Hospital Center (CHAN), a benchmark structure for the management of diabetes in Senegal, the Albert Royer National Children's Hospital Center (CHNEAR), the pediatric services of the General Hospital of Grand Yoff (HOGGY), from Aristide Le Dantec Hospital (HALD), main Hospital in Dakar and Pikine Hospital. The survey targeted in the various centers: Pediatricians, students in pediatric specialization (DES of pediatrics), medical students in thesis year having already carried out internships interned in pediatric services and therapeutic educators for the diabetes. Claimants responded to a self-administered survey form after we introduced them to and explained the purpose of the survey. The data was collected, entered and analyzed with Epi info version 7 Software.

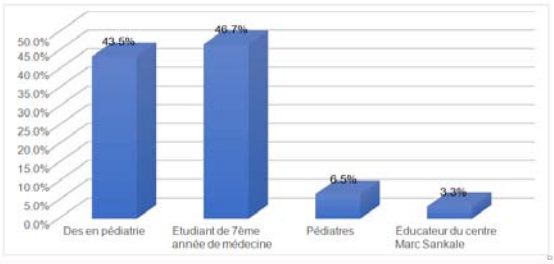


**Figure 1:** Distribution of providers according to their qualification.

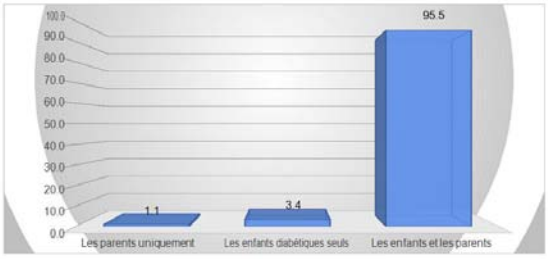


**Figure 2:** Target of psychological care according to providers.

## Results

Out of 120 files distributed, we recovered 92 files, or 76.6%. Nearly 70% of the providers surveyed worked in the two main reference sites in the management burden of childhood diabetes: CHAN and CHNEAR. Pediatricians represented 6.5% (6) of providers. The distribution of claimants according to their qualification is illustrated in Figure 1. The age of claimants was less than 30 years in 63% of the cases, 64.1% had never received any training in diabetology and 76.1% had less than 2 years of experience compared to the management of type 1 diabetes. According to 35.9% of providers, the diet of a diabetic child must be restrictive, including 2.2% of pediatricians, 15.2% of DES, 2.2% of educators and 16.3% of students. The consumption of sugary foods was prohibited, according to 4.3% of providers. Among the providers 76.7% recommended at least 3 daily meals and the reasons given are reported in Table 1. The providers surveyed thought that the consumption of sweeteners was prohibited for 34.8% because not recommended for 8.7%; useless for 5.4% and identical to quick sugar in 5.4%. According to 2.5% of providers, the dose of insulin should be increased during sports; stop administration for 1.3%. For providers, the main targets for therapeutic education were children and parents for 89.1% and lone parents for 7.6%. For all providers, therapeutic education is a continuous and repeated process allowing better follow-up for 25%; a better understanding of the disease for 16.3% and good therapeutic compliance for 17.4% of the cases. For the majority of providers (95.7%) the presence of a psychologist is necessary to support the patient in the experience of his illness (89.1%); monitoring of school results for 55.4% and support for the family for 81.5%. The target of psychological care according to providers is shown in Figure 2.

**Table 1:** Motivation for the number of recommended meals according to the providers surveyed.

| | Workforce | Percentage (%) |
|---|---|---|
| Do not know | 13 | 14.1 |
| Eating as a non-diabetic child | 46 | 50 |
| Avoid hypoglycaemia | 21 | 22.8 |
| Avoid snacking and hunger | 4 | 4.3 |
| Comply with insulin therapy and blood sugar | 11 | 12 |
| Facilitate the acceptance of treatment | 3 | 3.3 |
| Balance diabetes (better control glycemic figure) | 5 | 5.4 |

## Discussion

The training deficit in type 1 diabetes in particular and in diabetology in general noted in our study is insufficient compared to a study carried out in the Ile de France in 64 structures which had reported that the providers had mainly undergone level 1 training (less than 50 h) and 47.8%, level 2 training (100 h or university degree) [3]. The restrictive diet recommended by 35.9% of providers does not comply with international guidelines which recommend a healthy and balanced diet as for the general population, because the restrictive diet in children is associated with risks of malnutrition, delay growth and development [4,5]. Regarding the number of meals, the majority of providers had attitudes consistent with the recommendations, which are three balanced meals per day; which will provide all the essential nutrients, optimal growth, avoid bugs and provide a framework for regular monitoring of blood sugar levels [5,6]. According to 38.6% of the providers surveyed, the consumption of so-called diabetic foods (foods sweetened with sweeteners) is prohibited because unnecessary and contain fast sugar. According to international nutritional guidelines, these foods are unnecessary, expensive, and high in fat and may contain nutritious sweeteners with laxative effects [7]. According to 2.5% of the providers surveyed, the insulin dose should be increased during sports activities. On the contrary, in no case should the doses of insulin be increased, nor should the administration of insulin be stopped [6]. The recommended attitude is to adjust the doses of insulin's by lowering them according to the duration and intensity of physical activity. According to international ISPAD recommendations, therapeutic education concerns children, parents and those around them [7,8]. These recommendations are followed by providers. It must be early and continuous to allow empowerment for the child and the parents through knowledge brought and acquired skills [8,9]. Children with diabetes have higher rates of depression and other emotional problems than the general population. The main psychological problems being depression which affects 15% to 25% of adolescents with type 1 diabetes, anxiety of 13% to 17% and denial of illness [4]. The answers to this question for the majority of providers surveyed were consistent with the data in the literature.

## Conclusion

Improving the quality of treatment for T1D requires initial and continuous training of health professionals and the implementation of standardized protocols in the various health facilities to avoid certain errors in treatment. What is already known in the subject: Importance of therapeutic education and insulin therapy in the management of diabetes?

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