Difficulties Associated with Diabetes Management During the Junior Certificate Examination

Abstract:
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The aim of this study was to describe the adherence to recommended diabetes care during the Junior Certificate, and the utilisation of available allowances for children with type 1 diabetes. Questionnaires were sent within 3 months of the examinations to adolescents and their families attending our service completing the Junior Certificate in June of 2012. Fifteen of the 25 (60%) patients/parents completed the questionnaires. Five (33%) had higher than usual glucose readings during at least one exam and three (20%) experienced hypoglycaemia during at least one exam. None (0%) never checked capillary glucose levels during the exams. No patients left the examination area to perform diabetes related tasks. Thirteen (86%) brought fast acting glucose into the examination centre while only six (40%) brought a glucometer. Just four (27%) patients availed of the rest breaks allowed and six (40%) felt that their diabetes affected their examination performance.

Introduction
The target glycosylated haemoglobin A1c (HbA1c) in adolescence is 7.5% and is lower in type 1 diabetes, which has been suggested to reduce the risk of long term complications. However, blood sugar levels were unstable, and 3) that diabetes added to the stress of the examinations. Patients should know that suboptimal glycaemic control impacts negatively on examination preparation and performance. Hyperglycaemia, hypoglycaemia and wide fluctuations in blood glucose affect cognitive performance, and should be avoided in children preparing for and performing academic examinations. The duration of impaired cognition following episodes of hypoglycaemia is not known, but could impact both on study effectiveness and examination performance.

Methods
Adolescents with Type 1 diabetes attending the paediatric endocrinology service in Children’s University Hospital, Temple Street who completed the Junior Certificate examination in 2012 were eligible for inclusion in this study. Questionnaires detailing diabetes self care required during examinations, frequency of hypoglycaemic events, facilities to perform diabetes related tasks were sent to patients and their families. Adolescents and parents were asked to complete these questionnaires as soon as possible after the examinations and return them in the enclosed envelope. This study was approved by the Ethics Committee of the Children’s University Hospital, Temple Street.

Results
Twenty-five patients from our service completed the Junior Certificate in 2012, and 15 (60%) returned questionnaires (Table 1). The mean patient age at the time of Junior Cert was 15.4 (SD 1.6) years and the patients had diabetes for a mean duration of 5.2 (SD 3.5) years. Three (7%) reported experiencing hypoglycaemia during an examination, and 2 patients (13.3%) did not bring a fast acting glucose source to treat hypoglycaemia with them to the examination centre. Mean HbA1c did not change significantly prior to and after the Junior Certificate (8.5% vs 8.6%). Uptake of the examination break was low, with 1 patient taking a break during an examination. Almost half (n=7) of the patients felt that diabetes affected their examination performance. When asked to explain why they felt this happened, the answers included 1) worry that hypoglycaemia was affecting concentration, 2) general concern and 3) that diabetes added to the stress of the examinations.

Discussion
State-regulated examinations present a stressful event in the life of the adolescent. Impaired cognition is associated with hypoglycaemia and the time taken to return to baseline following such an event is not known. Optimisation is important to avoid adverse effects on performance. Rest breaks are available for students with type 1 diabetes to complete each examination, but just over a quarter of patients in this study availed of this support. These breaks are intended to facilitate diabetes self care including glucose checks during the examination. On the day of examination, the student should be prepared for the possible consequences of hypoglycaemia. Hypoglycaemia is also a risk, and the student must be prepared to identify and treat this promptly in the tightly regulated setting of the examination centre. Almost half of the patients did not bring a glucometer into the examination centre. Only 53% checked their capillary glucose levels during the exams and three (20%) experienced hypoglycaemia with them. Adolescents, their parents and schools need to ensure that this equipment is available during examinations.

Three patients experienced hypoglycaemia during one or more examination, but whether or not this affected performance is unknown. In the event of hypoglycaemia during an examination, it is possible that the allowance of extra time may be used to perform diabetes related tasks, if necessary. These rest breaks must be applied for in advance, so patients should be informed of these accommodations early in the academic year. The required provision of accommodations for children with type 1 diabetes during examinations is recognised internationally. In Australia, chaperones or the Junior Certificate examination may take rest breaks to a maximum of ten minutes per hour of examination time. Similar to Ireland, they are permitted to eat and take necessary equipment with them into the examination centre. Little is known of the experience of children with type 1 diabetes in Ireland during the Junior Certificate, so the aim of this study was to gain a better understanding of the compliance of children with type 1 diabetes with diabetes care during this examination, and to ascertain their perceived effect of type 1 diabetes on examination performance. We hoped that gaining a better understanding of this would allow us to better guide our patients who are preparing for this and other examinations.

Conclusions
In order to facilitate children with type 1 diabetes reaching their potential in academic examinations, accommodations during examinations are available. All students with chronic conditions, including Type 1 diabetes, which may affect performance in examinations are entitled to such accommodations. The Examinations Commission for reasonable accommodations to be made. The purpose of these is to lessen the impact of the condition on their performance, while ensuring that the child is not given an unfair advantage over other candidates. Specifically, a child with type 1 diabetes in Ireland can apply for a maximum of ten minutes per hour of examination time. These rest breaks can be taken outside the examination hall, and to allow for the management of hypoglycaemia. Patients should know that suboptimal glycaemic control impacts negatively on examination preparation and performance. Hyperglycaemia, hypoglycaemia and wide fluctuations in blood glucose affect cognitive performance, and should be avoided in children preparing for and performing academic examinations. The duration of impaired cognition following episodes of hypoglycaemia is not known, but could impact both on study effectiveness and examination performance.
optimising control to maximise performance is emphasised. Parents should be informed of the special accommodations available to their children at the exam and should also be encouraged to discuss this with their child's school prior to the examination. A plan should be in place for the day of the exam, where a checklist is provided for the adolescent outlining the equipment that should be brought into the examination centre.

We would also recommend that the Department of Education issue all schools with clear guidelines for accommodating children with diabetes. In addition, invigilators in examination centres where children with diabetes are sitting examinations, should have a basic understanding of the common diabetes related self care procedures that may be required during the examination. We would hope that these interventions may reduce the proportion of patients who feel that type 1 diabetes has a negative impact on examination performance.

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References
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