

## Ramadan Fasting by Adolescents and Children with Diabetes: A High-risk Group Examined

Muslims throughout the world are aware of the spiritual benefits of fasting during the month of Ramadan and look forward to this month of spiritual and emotional cleansing, where they seek to be closer to God and improve all aspects of their lives.<sup>[1]</sup> Aside from the spiritual benefits, there is increasing interest in the health benefits of intermittent fasting<sup>[2]</sup> or time-limited feeding.<sup>[2]</sup> Nonpubertal children are exempt from fasting, as are those who have a long-term condition, such as Type 1 diabetes, as the risks of fasting are significant. The Diabetes in Ramadan Alliance Consensus guidelines on managing diabetes in Ramadan state clearly that people living with Type 1 diabetes are at high risk of adverse events such as hypo- or hyperglycemia and should be discouraged from fasting.<sup>[3]</sup> Large epidemiological studies of Ramadan fasting among people with diabetes suggest, however, that many people with Type 1 diabetes fast for at least some of Ramadan. The EPIDIAR study surveyed over 1000 people with diabetes in 13 countries during Ramadan 2001.<sup>[4]</sup> Its results showed that 42.8% of people with Type 1 diabetes fasted for at least 15 days during Ramadan. Severe hypoglycemia occurred significantly more frequently during Ramadan compared with other months (0.14 vs. 0.03 episode/month). Recent data suggest that diabetic ketoacidosis, however, is not more frequent in patients with Type 1 diabetes who fast during Ramadan<sup>[5,6]</sup>

Many Muslim children may be keen to undertake fasting during Ramadan as they see their peers or siblings fasting and wish to participate. Fasting is an important family activity which creates social cohesion and bonding within Muslim families, particularly at the break of fast (Iftar). Children with Type 1 diabetes often feel “different” from their peers or siblings due to their condition, which may limit their eating or activities compared to other children.<sup>[7]</sup> Therefore, Muslim children with Type 1 diabetes may feel the social pressure or spiritual need to fast, so should they be allowed to do so or not?

In this issue of *Ibnosina Journal of Medicine and Biomedical Science*, Beshyah *et al.* try to explore this thorny issue and provide some answers for clinicians.<sup>[8]</sup> The authors have undertaken a novel narrative review of the subject, surveying expert opinion and evidence available in the medical literature. There is a surprising number of studies on this subject, although many studies are small, uncontrolled, single center, and prone to bias. Nevertheless, the majority of studies suggest that children and adolescents can fast safely during Ramadan with low risk of adverse events, provided they are carefully educated and supervised before and during Ramadan, and they are prepared to break the fast if they develop hypo- or hyperglycemia.

Management of Type 1 diabetes is undergoing a revolution at the moment, with new technologies providing hope for major benefits in management of the condition.<sup>[9]</sup> Fasting for people with Type 1 diabetes can be made safer with use of newer medical technology which is now widely available in well-resourced medical systems. These advances include insulin analogs providing much more reliable insulin coverage, continuous subcutaneous insulin infusion therapy, continuous glucose monitoring sensors, or more recently, the use of flash glucose monitoring (such as FreeStyle Libre®), all of which may assist management of Type 1 diabetes during Ramadan and beyond. Furthermore, telemonitoring of children with technology that enables carers to monitor blood glucose from afar, if afforded, may be a useful adjunct to aid children and adolescents in their fasting.

Dr. Beshyah *et al.* emphasize the urgent need for high-quality research in this area. Many studies are small, single center, and prone to bias. Larger, multicenter collaborations are needed to improve the evidence base and enable sound advice and guidance to be given to children with Type 1 diabetes and their families.

The diagnosis of Type 1 diabetes in a child is often devastating for child and family and can have far-reaching effects on the family’s quality of life. It is understandable that many parents may wish to overprotect their child once the diagnosis is established, which may lead to social difficulties for the child and their interaction with peers.<sup>[10]</sup> Fasting for Muslim children is a family and social activity, often rewarded with praise and gifts, especially when fasting is starting in a child’s life. Parents and carers of children with Type 1 diabetes should avoid marginalizing such children, as this may harm them psychologically in the long term. While a child or adolescent with Type 1 diabetes can be justifiably excused from fasting, if they express the strong preference to fast with his or her peers, parents and their medical team should try to offer support to enable the child to do so safely and without fear. There should be a prolonged preparation time, potentially with practice fasts prior to Ramadan, regular Ramadan-focused education, and support for children and families during Ramadan to enable them to problem solve if there are any issues during the fast, performing regular blood glucose monitoring and be prepared to stop the fast if they experience hypo- or hyperglycemia during the fasting hours. Use of technology to deliver insulin and monitor glucose frequently and easily should also be offered if available. In this way, children with Type 1 diabetes can enjoy the huge spiritual, emotional, social, and physical benefits of fasting safely and without fear by exercising caution and avoiding complacency.

**Authors' contribution**

Equal.

**Compliance with ethical principles**

Not applicable.

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