

# Managing diabetes during Navratris with special focus on Durga pujas

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## ABSTRACT

Fasting during festivals is a common practice across all religions, believed to be associated with spiritual well-being. No literature is available addressing the challenges associated with blood glucose control in patients with diabetes during the festivals of Navratri and Durga puja, which are associated with both culinary extravagances and ritualistic fasting. Fasting alternating with binge eating can result in severe metabolic alterations, increasing both morbidity and mortality in diabetes. Dietary restraint is central to ensuring adequate glycemic control during Navratris and Durga pujas. Ritualistic fasting and dietary changes should be avoided in patients with poorly controlled diabetes with multiple comorbidities. Sulfonylureas should be avoided in case of prolonged fasting. Fast should be broken whenever blood glucose is < 70mg/dl. Target blood glucose during fasting state is 100-200mg/dl. Increasing awareness among patients, highlighting the need to enjoy festivals responsibly, and promoting healthy diet habits and exercise have an important role in maintaining glycemic control during Navratri and Durga pujas.

**Key words:** Diabetes, Durga puja, fasting, festivals, hypoglycemia, Navratri

## INTRODUCTION

Navratri (literally meaning nine nights) is a 10 day-night festival celebrated in different forms by Hindus and Jains across India and different parts of the globe, in the Hindu month of Ashwin (September-October) every year. In the eastern parts of India (West Bengal, Odisha, Bihar, Jharkhand, Assam, Manipur, and Tripura) and the neighboring countries of Nepal and Bangladesh, it is celebrated in the form of Durga pujas characterized

by ceremonial worship of 10-armed goddess Durga from 6<sup>th</sup> to 10<sup>th</sup> day of Navratri. This autumn festival is one of the most important events of Hindu calendar, an occasion of reunion and rejuvenation, characterized by fasting and feasting on traditional culinary, intermingled with worship. It also characterizes the beginning of festival season in India, which ends with Diwali a month later. The month long Ramzan fast followed by Eid-ul-Fitr also takes place around the same time. These festivals are synonymous with eating and gifting sweets, food outings, and are often associated with worsening of diabetes control, greater occurrence of diabetes complications along with increased incidence of diabetes in high-risk individuals; a result of sudden increase in intake of calories, especially refined carbohydrates, saturated fats coupled with sedentary life styles, thrifty phenotype, and increased genetic predisposition to diabetes.<sup>[1]</sup>

This is especially concerning cause as per 2010 estimates,

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DOI:  
10.4103/2321-0656.152804

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it is believed that India has around 5.8 crore individuals suffering from diabetes, which is believed to surge to 8.7 crores by 2030.<sup>[2]</sup> Recent data have suggested nearly 8-10% of our population to be suffering from diabetes.<sup>[3]</sup> To aggravate the problem, there is even a larger proportion of Indians suffering from prediabetes (10-14%), a transient state, with a high annual risk of progression to diabetes ranging from 14 to 18%<sup>[4,8]</sup> which is one of the highest in the world, compared to 2.5% in USA<sup>[7]</sup> and 11.5% in China.<sup>[9]</sup>

This systematic review intends to analyze all available literature for preventing glycemic excursions associated with erratic food intake coupled with prolonged fasting associated with religious festivals and provide suggestions to prevent diabetes as well as avoid diabetes complications in patients with diabetes with specific focus on Durga pujas.

## PRACTICES AND PROBLEM

*Durga pujas* is one of the most awaited festivals of eastern India. The *Durga pujas* in the modern sense were perhaps first held in late 1500s.<sup>[10]</sup> In the Bengali folklore it is commonly believed that that Raja Kangsha Narayan of Taherpur (Rajshahi district of erstwhile undivided Bengal, presently in Bangladesh) organized the first autumn Durga puja. Twenty-first century Durga puja is a huge community event, funded and organized by public participation in different localities of villages, towns, and cities; characterized by construction of temporary temple-like structures called “pandals” where the goddess is worshipped. Over the years, pandals have become a symbol of artistic creativity, expression, and grandiosity; a place of social gathering, meeting point for friends and family, holding cultural events, social and community service, and house various food stalls and eating joints. It is believed that the city of Kolkata itself witness more than 4,500 such pandals during Durga pujas.<sup>[11]</sup> People take great pride in pandal hopping, enjoying the different themes associated with each Durga puja. Home cooking is usually avoided during these days as people prefer to eat out, relish traditional Bengali fare, and experiment with multicultural cuisines at these pandals and restaurants; invariably leading to increased calorie intake, saturated fat (deep fried foods) and salt intake, not to forget the exponential increase in consumption of sweet-meats, most important of them being the “rasgullas”, soft spongy balls made from cottage cheese dipped in sugar syrup and “sandesh” made again from fresh cottage cheese mixed with jaggery. This is further complicated by erratic food timings, altered daily routine, missing of exercise, altered

sleep cycles, as many people trove around the city whole night in an effort to avoid both crowds and enjoy the illumination at pandals.

Beyond the culinary extravagances associated with Durga pujas, believers frequently fast during this period, mostly commonly on the 8<sup>th</sup> day followed by the 9<sup>th</sup> day. These fasting usually last 12-18 h, and are broken by offering prayers (Pushpanjali) to the goddess. Uncommonly, people also observe extended fasts lasting over several days. This is in contrast to Navratri celebrations where fasting frequently extend beyond 24 h and may last several days.

### Durga pujas of Bangladesh

*Durga pujas* celebrations in Bangladesh is quite similar to that in West Bengal, with both fasting and feasting being an integral part of the celebrations. Every year doctors at Bangladesh Institute of Research, Rehabilitation in Diabetes, Endocrine and Metabolic Disorder (BIRDEM), the largest diabetes center in Bangladesh, face a sharp rise in the number of patients attending the diabetic clinics with worse glycemic control during the Ramzan month as well as during and after Durga pujas. Lack of awareness regarding fasting and feasting, and adjustment of antidiabetic medications is a major problem on either side of the border, resulting in increased patient morbidity.

### Dashain of Nepal

Durga Puja is known as Dashain in Nepal, the longest and most auspicious festival celebrated over 15 days (1<sup>st</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, and 10<sup>th</sup> (Vijaya dashami) days being the most important), is a time for fasting (by the orthodox), feasting, rejoicing, and family reunion from across the globe. The festivities end with the worship of goddess Laxmi (goddess of wealth) on the full moon night called Kojagrata Purnima. Meat, especially red meat in all forms (fried, roasted, and barbecued) is an integral part of Dashain celebration, especially on the 9<sup>th</sup> day. Saturated fats, salt, refined sugar in the form of sweets, and carbohydrate intake increases exponentially during this period having an adverse impact on both glycemic and blood pressure control in susceptible individuals.

### Religious fasting and increased glycemic variability

No data is available on the occurrence of hypoglycemia in patients with diabetes doing religious fasting during Navratri and Durga pujas. A population-based study of glycemic control during Ramzan in 13 countries revealed 7.5-and 4.7-fold increased risk of severe hypoglycemia in patients with type-1 (T1D) and type-2 diabetes (T2D), respectively.<sup>[12]</sup> Fasting for prolonged periods is frequently followed by overeating and binge eating resulting in rebound hyperglycemia. Dehydration secondary to

restricted fluid intake, often in the setting of stoppage of medications and insulin, increases the risk of ketoacidosis in these patients.<sup>[12]</sup> Infact, stoppage of insulin associated with religious fasting is one of the commonest causes of ketoacidosis in patients with T1D in India.<sup>[13]</sup> Dehydration can result in postural hypotension and syncope in patients with autonomic neuropathy along with increased risk of thrombosis and stroke secondary to hyperviscosity. Osmotic diuresis secondary to rebound hyperglycemia following overeating can result in dyselecrolytemia and altered sensorium, especially in the elderly. Based on observations during Ramzan, religious fasting in general is discouraged in patients with T1D by various societies including the American Diabetic Association (ADA).<sup>[14]</sup> However, all these recommendations are primarily based on consensus rather than clinical trials.

Prolonged fasting during Ramzan has not been linked to increased occurrence of cardiovascular (CV) events, in patients with stable coronary artery disease (CAD).<sup>[15]</sup> In fact, intermittent fasting in normoglycemic individuals has been linked decreased risk of diabetes and CAD.<sup>[16]</sup> However, fasting has been linked to worsening of dyslipidemia in patients with diabetes.<sup>[15]</sup> A recent study showed that 25-h religious fast without any form of food can be safely done in patients with T1D on multiple subcutaneous insulin injections (MSII) or continuous subcutaneous insulin infusion (CSII), when accompanied by self-monitoring of blood glucose (SMBG) and corrective insulin boluses as needful.<sup>[17]</sup> They showed that over 88 fasts in 57 T1D patients (12.3-31.2 years), with mean disease duration of 8.7 years and a mean HbA1c of 8.5%, 78.4% fasts (69/88) were completed without symptomatic hypoglycemia or hyperglycemia. Commonest cause of premature termination of fast was mild hypoglycemia (13 fasts; 14.7%), followed by feeling unwell or hyperglycemia (6/88). None of the patients had severe hypoglycemia. Corrective insulin boluses were necessary in 45% of successful fasts.<sup>[17]</sup> They recommended basal insulin (e. g., glargine) at 0.2U/kg/day can help in undertaking 25 h fasts safely in stable T1D patients.<sup>[17]</sup>

Ritualistic fasting under peer and family pressure is often treated as a test of personal religious faith, often resulting in unrealistic strict abstinence from all foods; drinks, including water; and stoppage of all antidiabetic medications in patients with diabetes. For example, popular belief is that even blood glucose testing by finger pricking leads to break of fast during *Ramzan*.<sup>[18]</sup> The other end of spectrum is fasting during *Navratri* by Jains, which commonly extends beyond 24 hours and often lasts over several days, when even water is not allowed. Such severe

forms of extended fasting should strictly be avoided in patients with diabetes, especially T1D.

### Risk stratification of patients with diabetes

Diabetic patients with poor glycemic control (HbA1c > 9%), recent history of ketoacidosis, established microvascular and macrovascular complications, severe associated comorbid states, infections, pregnancy, and those in geriatric age group, should be discouraged to undertake diet and diabetic medication modifications during festivals like Navratri and Durga pujas. They should be strongly discouraged against fasting.

Stable patients of diabetes, who are willing to continue medications during Navratris and Durga pujas, motivated to do SMBG and with knowledge for corrective insulin boluses, aware about symptoms of hypoglycemia, hyperglycemia, osmotic symptoms, and full knowledge of diet and lifestyle interventions have the lowest risk of complications following fasting and diet changes during Navratri and Durga pujas.

### Diet and lifestyle recommendations

Dietary restraint is central to ensuring adequate glycemic control during Navratris and Durga pujas. One should keep a tab on number of sweets consumed. It is a good idea to consume half or even a quarter of sweet with friends and family over several sittings. Taking a smaller serving of each meal to account for increased occurrence of between meal snacking helps in keeping a tab on the calories consumed over 24 h. Carbohydrate counting and adjusting for short acting insulin boluses in patients on MSII has an important role in ensuring adequate glycemic control. It is important to realize that family members and the society have an important role to play in this. The second Diabetes Attitudes Wishes and Needs (DAWN 2) study highlighted that diabetics in general across the globe feel discriminated against cause of diabetes, and especially if they are taking insulin.<sup>[19]</sup> This is perhaps even more so in India.<sup>[20]</sup> These feelings are accentuated during festivals like Navratris and Durga pujas when the culinary extravagances are not openly accessible to them, inspite of people around them freely enjoying. This leads to a significant increase psychological morbidity of the patient.<sup>[21]</sup> As correctly pointed by Sawhney *et al.*, 'culinary cruelty' or 'dietary draconism' has to be abolished from our society.<sup>[22]</sup> Festivals, functions, and restaurants in general provide unhealthy food options.

More healthy eating options can be made available at the *pandals*. It is important to inculcate healthy eating habits for the entire family instead of ostracizing a diabetic from food, especially during festivals. The entire family, eating

at home during pujas is advisable, and especially so for diabetics. It is a good idea to take food at home before leaving for pandal hopping. This will discourage eating out, which is usually unhealthy. While dining out, one should keep in mind the food pattern advised by the dietician and the food exchanges. As far as possible, daily schedules should be maintained, and late-night/whole-night excursions are discouraged. Skipping of exercises should be avoided. One should always make out extra time for exercises and physical activity during festivals. It is a good idea to go for an extra 15-30 min of jogging, running, or walking to burn those extra calories consumed. Water intake should be liberal and so the consumption of green leafy vegetables.

#### Antidiabetic medications during Navratri and Durga pujas

Kalra *et al.*, have recently highlighted several issues associated with ritualistic fasting in Indian festivals, with focus on Karva Chauth, an annual day long fast kept by married Indian women in northern India, and frequent weekly fasts kept on specific days by Hindus across the country.<sup>[23]</sup> A specific drug treatment plan focusing on Karva Chauth has been provided.<sup>[23]</sup> The importance of pre-fast counseling and increasing awareness regarding hypoglycemic and hyperglycemic symptoms among patients with diabetes was also highlighted.<sup>[23]</sup> Patients should visit their treating physician days to weeks before festival, for appropriate pre-festival counseling and adjustment of their antidiabetic medications during the festival. It would be a good practice to audit the SMBG charting done by patients during festivals, for assessment of the glycemic variability so that lessons learnt can be incorporated in next year's treatment plan.

#### Oral antidiabetic medication adjustment during Durga pujas

Hypoglycemia risk is maximal with long-acting insulin secretagogues like sulfonylureas. Among sulfonylureas, glibenclamide has the maximum hypoglycemia risk followed by glipizide, gliclazide, and glimeperide. Patients planning for fasting greater than 12 h duration should not take the same day or previous night sulfonylurea. Patients who plan to do prolonged intermittent fasting during Navratri and Durga pujas may be shifted from sulfonylureas to short-acting secretagogues like repaglinide or nateglinide, to reduce hypoglycemia risk. Metformin, pioglitazone, alpha-glucosidase inhibitors, and incretin-based therapies (dipeptidyl peptidase-4 (DPP4) inhibitors and glucagon-like peptide-1 (GLP1) analogues) can be safely continued, as they have low associated risk of hypoglycemia. Sodium-glucose linked transporter (SGLT)-2 inhibitors are going to be launched in India in early 2015. They also have low risk of hypoglycemia.

However prolonged fasting without fluid intake may increase the risk of hypotension and dehydration with the use of these agents.

#### Insulin adjustment during Durga pujas

Patients on premixed insulin injections twice daily may preferably be shifted to a more physiological basal bolus regimen before the onset of festival season. Premixed insulin regimens are rigid and are less equipped to handle the erratic food regimens accompanied by fasting during festivals, increasing the risk of both uncontrolled hyperglycemia and hypoglycemia. In contrast to general belief, stable patients with T1D can fast safely up to 24 h. In stable T1D and T2D patients on insulin, planning to fast for 12-24 h, basal insulin should be continued at around 0.2U/kg/day.<sup>[16]</sup> Neutral Protamine Hagedorn (NPH), glargine, or detemir; either of the three long-acting insulin can be used. Premeal short-acting insulin boluses should be avoided during fasting state for obvious reasons. SMBG is strongly recommended during the duration of fasting, at least 6 hourly, and corrective insulin boluses may be administered in case of blood glucose values exceeding 250 mg/dl. Short-acting insulin analogues (lispro, glulisine, or aspart) may be preferred over regular insulin, simply cause of their shorter duration of action as well as flexibility of administration as they can be taken immediately after food also, though evidence is lacking in this regard. Fast should be broken immediately in case of hypoglycemic symptoms and/or blood glucose values less than 70mg/dl. The target blood glucose during fasting state is 100-200mg/dl. It is advisable to do a home blood pressure monitoring also and adjust antihypertensive medications accordingly. Urgent studies are warranted to evaluate the glycemic variability and the impact of antidiabetic medications in patients undergoing ritualistic fasting during Navratri and Durga pujas, which will help in the development of more specific guidelines for the general population.

## CONCLUSION

Ensuring good glycemic control during Navratri and Durga pujas is a challenge both for the treating doctor and the patient. Increasing awareness among patients, highlighting the need to enjoy festivals responsibly, promoting healthy diet habits and exercise, carbohydrate counting, adjustment of antidiabetic medications, and insulin doses accompanied by frequent SMBG during fasting can go a long way in reducing diabetes morbidity during Navratri and Durga pujas.



## ACKNOWLEDGEMENT

The authors would like to acknowledge inputs from Sanjay Kalra, Department of Endocrinology, Bharti Hospital and BRIDE, Karnal, India in the development of this article.

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**How to cite this article:** Dutta D, Biswas K, Sharma M, Maskey R, Baruah MP, Amin MF. Managing diabetes during Navratri with special focus on Durga pujas. *J Soc Health Diabetes* 2015;3:84-8.

**Source of Support:** Nil. **Conflict of Interest:** None declared.