

Study of glycemic control impairment during Indian festival holi in diabetes mellitus patients in Jodhpur region

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Abstract

Diabetes Mellitus is the most common endocrine metabolic disorder of glucose metabolism. During festival season there is increased consumption of carbohydrate rich diet that provide additional glucose which likely to influence metabolic control. 25 clinically established Diabetes Mellitus patients were compared with 25 healthy controls attending Out Patient Department of Dr S.N. Medical College, Jodhpur. Fasting and Post Prandial blood glucose level was measured by GOD-POD method. Mean Fasting and Post Prandial blood glucose values were significantly elevated in Diabetes patients ($p < 0.0001$, $p < 0.0001$, $p < 0.0001$ and $p < 0.0001$, $p < 0.0001$, $p < 0.0001$) as compared to Healthy control subjects studied 10 days before Holi, During Holi festival, 10 days after Holi festival, respectively. Thus during Festivals there is increased consumption of sweets that impaires glycemic control in Diabetes Mellitus patients.

Keywords: Fasting blood glucose, Post Prandial blood glucose, GOD-POD, Glycemic control

Introduction

Diabetes Mellitus is the most common endocrine metabolic disorder characterized by chronic hyperglycemia due to defect in Insulin secretion, Insulin action or both which leads to disturbance in carbohydrate, fat and protein metabolism.

India is the Diabetes Capital of the World mainly because of the highest number of patients. Currently up to 11% of India's urban population and 3% of rural population above the age of 15 has diabetes¹.

Glycemic control is referring to the typical level of blood sugar in a person with Diabetes Mellitus. "Perfect Glycemic control" would mean to glucose levels were always normal (70-130 mg/dL). "Poor

Glycemic control" refers to persistently elevated blood glucose level (200-500 mg/dL).²

Hindu Festival Holi is usually associated with increased consumption of sweets and soft drinks which likely to influence metabolic control.

Materials and methods

The present study was conducted on 25 healthy controls and 25 clinically established diabetes Mellitus patients attending the Out Patient Department of Medicine, Dr S.N. Medical College and associated groups of hospitals, Jodhpur. Blood Glucose level was measured by

Endpoint Enzymatic Glucose Oxidase-Peroxidase method.

Results

Mean Fasting blood glucose values of healthy controls and Diabetes patients were 87.12 ± 11.52 & 174.16 ± 27.60 mg/dL, 95.72 ± 7.23 & 212.20 ± 29.82 mg/dL and 89.36 ± 7.69 & 183.24 ± 25.02 mg/dL when studied 10 days before Holi, During Holi Festival and 10 days after Holi festival, respectively.

Mean Fasting blood glucose values ($t=14.61$, $p<0.0001$; $t=18.97$, $p<0.0001$; $t=17.93$, $p<0.0001$) in Diabetes patients was statistically elevated as compared to the healthy controls studied 10 days before Holi,

During Holi Festival and 10 days after Holi festival, respectively.

Mean Post Prandial blood glucose values of healthy controls and Diabetes patients were 103.56 ± 11.78 & 215.28 ± 29.58 mg/dL, 116.32 ± 12.95 & 258.28 ± 39.91 mg/dL and 109.16 ± 9.94 & 219.60 ± 24.30 mg/dL when studied 10 days before Holi, During Holi Festival and 10 days after Holi festival, respectively.

Mean Post Prandial blood glucose values ($t=17.54$, $p<0.0001$; $t=16.91$, $p<0.0001$; $t=21.03$, $p<0.0001$) in Diabetes patients was statistically elevated as compared to the healthy controls studied 10 days before Holi, During Holi Festival and 10 days after Holi festival, respectively.

Table 1: Mean Fasting Blood Glucose (mg/dL) among the group studied

Sr. No.		Group studied	Fasting Blood Glucose (mg/dL) (Mean \pm S.D.) [Range]
1	Pre Holi (Before10 days)	Healthy Controls	86.92 ± 11.34 [70-109]
		Diabetes Patients	174.16 ± 27.60 [122-220]
2	During Holi Festival	Healthy Controls	95.72 ± 7.23 [82-109]
		Diabetes Patients	212.20 ± 29.82 [150-265]
3	Post Holi (After 10 days)	Healthy Controls	89.36 ± 7.69 [75-104]
		Diabetes Patients	183.24 ± 25.02 [135-225]

Table 2: Statistical analysis of Fasting Blood Glucose (mg/dL) among the Healthy controls and Diabetes Patients

Sr. No.	Group Compared	t-value	p-value
1	Pre Holi (Before10 days)	14.61	$p<0.0001$ (HS)
2	During Holi Festival	18.97	$p<0.0001$ (HS)
3	Post Holi (After 10 days)	17.93	$p<0.0001$ (HS)

* HS = Highly Significant

Table 3: Mean Post Prandial Blood Glucose (mg/dL) among the group studied

Sr. No.		Group studied	Post Prandial Blood Glucose (mg/dL) (Mean ± S.D.) [Range]
1	Pre Holi (Before10 days)	Healthy Controls	103.56 ± 11.78 [87-132]
		Diabetes Patients	215.28 ± 29.58 [162-287]
2	During Holi Festival	Healthy Controls	116.32 ± 12.95 [95-140]
		Diabetes Patients	258.28 ± 39.91 [200-320]
3	Post Holi (After 10 days)	Healthy Controls	109.16 ± 9.94 [90-129]
		Diabetes Patients	219.60 ± 24.30 [168-276]

Table 4: Statistical analysis of Post Prandial Blood Glucose (mg/dL) among the Healthy controls and Diabetes Patients

Sr. No.	Group Compared	t-value	p-value
1	Pre Holi (Before10 days)	17.54	p<0.0001 (HS)
2	During Holi Festival	16.91	p<0.0001 (HS)
3	Post Holi (After 10 days)	21.03	p<0.0001 (HS)

* HS = Highly Significant

Results

Mean Fasting blood glucose values of healthy controls and Diabetes patients were 87.12±11.52 & 174.16±27.60 mg/dL, 95.72±7.23 & 212.20±29.82 mg/dL and 89.36±7.69 & 183.24±25.02 mg/dL when studied 10 days before Holi, During Holi Festival and 10 days after Holi festival, respectively.

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Mean Post Prandial blood glucose values (t=17.54, p<0.0001; t=16.91, p<0.0001; t=21.03, p<0.0001) in Diabetes patients was statistically elevated as compared to the healthy controls studied 10 days before Holi, During Holi Festival and 10 days after Holi festival, respectively.

Discussion and conclusion

In this study, a highly significant correlation was observed when Fasting blood glucose of Diabetes patients was compared with healthy controls. The results of this study were concordant with Hajianfer H *et al* (2012)³ and Samatha P *et al* (2012)⁴.

Post Prandial blood glucose of Diabetes patients also showed a highly significant relationship when compared with healthy controls. Similar results were also reported by Mathur N *et al* (2012)⁵ and Mahato R V *et al* (2011).⁶

Thus, it is concluded that during festival and feasting due to cultural belief, faith and traditions there is increased consumption of sweets that impairs glycemic control with increased risk of hyperglycemia.

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