

## Review Article

# Dietary approaches in management of Diabetes : current perspectives in India

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**Optimal management of diabetes leading to good metabolic control, prevention of complications and concomitant avoidance of hypoglycaemia is a key to successful management of this disorder. With the available nutritional management guidelines, and diversity of current dietary approaches in India, the need for comprehensive, patient-centered and flexible national nutritional guideline is still felt. The review focuses on various dietary approaches used for diabetes management in India.**

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**Key words :** Diabetes, India, diet, carbohydrate, macronutrients.

Indian Council of Medical Research (ICMR) defined diabetes mellitus as a metabolic-cum-vascular syndrome of multiple etiologies characterized by chronic hyperglycemia, disturbances of carbohydrate, fat and protein metabolism and causing defects in insulin secretion, insulin action or both<sup>1</sup>. It is mandatory for the people with diabetes to maintain a discipline and balance between nutritional management, physical activity and medical treatment as a part of diabetes self-management<sup>2,3</sup>. Good glycaemic control early in the disease results in lower frequency of chronic diabetes complications, which in turn reduces the healthcare cost<sup>4</sup>.

### *Dietary Approaches in Management :*

Various nutritional guidelines and target glycemic goals for diabetes are given by Diabetes Control and Complications Trial (DCCT), Stockholm Diabetes Study in type 1 diabetes, UK Prospective Diabetes Study (UKPDS), Action to Control Cardiovascular Risk in Diabetes (ACCORD) study, Action in Diabetes and Vascular Disease: Preterax and Diamicon MR Controlled Evaluation (ADVANCE) trial, International Diabetic Federation (IDF), American Diabetes Association (ADA), The British Diabetes Association, European Association for the Study of Diabetes (EASD), American Heart Association (AHA), Canadian Diabetes Association, Indian Diabetes Prevention Program (IDPP), ICMR, Research Society for the Study of Diabetes in India (RSSDI), etc aiming to improve health outcomes<sup>5-13</sup>.

There are no disease-specific nutrition guidelines for youth with T1DM. For the nutritional management of blood glucose levels, optimising the role of macronutrients, monitoring carbohydrate intake (carbohydrate majorly affects postprandial blood glucose levels) and balancing carbohydrate intake with insulin levels is recommended to be central to all the dietary approaches<sup>14</sup>. Similarly, for type 2 diabetes management, all the guidelines emphasize towards initial therapy with lifestyle intervention such as healthy balanced diet with energy balance, primary prevention of overweight, and obesity, quality and quantity dietary carbohydrate, protein, fat and micronutrient intake and other specific nutrition recommendations, using exchange lists for meal planning with optimum food choices to meet recommended dietary allowances (RDA) and carbohydrate counting with adequate physical activity<sup>15</sup>. It will ensure normal body weight, decrease insulin resistance and achievement of optimum growth and development. Thereafter the treatment therapy moves towards the addition of medications, transition to new regimens when target glycemic goals are not achieved or sustained and addition of insulin therapy for the people who are not able to meet the patient-specific individualised target goals<sup>5,7,16,17</sup>. There is no clear evidence of benefit from vitamin or mineral supplements for the patients who have no underlying deficiencies. The RDAs of micronutrients should be met from natural food sources through intake of a balanced diet<sup>18</sup>.

A meta-analysis was conducted by Schwingshackl *et al*, 2018 on the comparative efficacy of different dietary approaches on glycaemic control in patients with type 2 diabetes mellitus. It has shown that various dietary approaches such as low-fat, Vegetarian, Mediterranean, high-protein, moderate-carbohydrate, low-carbohydrate, control, low GI/GL and Palaeolithic diets significantly reduce HbA1c (-0.82 to -0.47% reduction) and fasting

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glucose (-1.61 to -1.00 mmol/l reduction) compared to a control diet<sup>19</sup>.

Anderson *et al*, 1993 used nutrition interventions such as healthy food choices, exchange systems, carbohydrate counting, total available glucose and behavior management approaches coupled with intensive insulin therapy for the attainment of normoglycemia in the Diabetes Control and Complications Trial (DCCT)<sup>20</sup>. Contextually, Ortiz *et al*, 2014 showed that basic carbohydrate counting, glycemic index, and glycemic load are important tools for patients to master for their blood glucose control<sup>21</sup>. Furthermore, reviews conducted by Jain, 2014 and Smart *et al*, 2014 highlighted that optimal glycemic control in T1DM requires a balance of insulin therapy with diet and exercise with greater flexibility in lifestyle<sup>22,23</sup>. Various nutritional approaches have been implemented and evaluated for improvement of glycemic control among people with diabetes (summarised in table)<sup>16,24-40</sup>.

### *Nutritional Recommendations at Clinical Level :*

While planning various dietary approaches, dietitians and health care professionals distribute the respective patient-centered recommended calories into the macronutrients by counting the amount of carbohydrates, proteins and fats per day as per disease condition. In diabetes, the carbohydrates are evidenced to dominantly cause postprandial rise in blood glucose levels while proteins and fats cause a prolonged blood glucose rise by 3-4 hours after food ingestion, and frequently, a relative insulin resistance<sup>41</sup>. The micronutrients are later calculated to meet RDAs and specific physiological needs.

### *Conclusion :*

There are diverse nutritional approaches being practiced in India. There is no tailor-made approach to diabetes. Nutritional recommendations are timely modified with respect to patient-centered factors, challenges and disease complications. Matching the dietary composition with the blood glucose levels and insulin dose adjustments can help us achieve the optimum goals of nutrition therapy among people with diabetes.

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