

Category	Key Dietary Guidelines
BMI-Based	Underweight individuals should increase calorie intake with nutrient-dense foods, while overweight/obese individuals should focus on portion control, fiber-rich foods, and regular exercise.
Gender- Based	Males require higher protein and calorie intake for muscle maintenance; females need increased iron (pre-menopause), calcium, and vitamin D for bone and reproductive health.
Medical Conditions	Hypertension: Follow a low-sodium DASH diet. Diabetes: Focus on glycemic control and fiber intake. Hyperlipidemia: Reduce saturated fats, increase omega-3s. PCOS: Prefer low GI foods and balanced protein intake. Osteoporosis: Ensure high calcium and vitamin D. Kidney Disease: Limit sodium, phosphorus, and potassium.
Age-Based	Children need balanced nutrition for growth, adolescents require higher protein and calcium, adults should focus on portion control, and seniors benefit from increased fiber, protein, and bone-supporting nutrients.

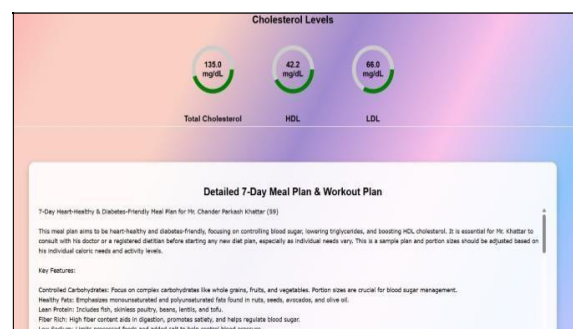
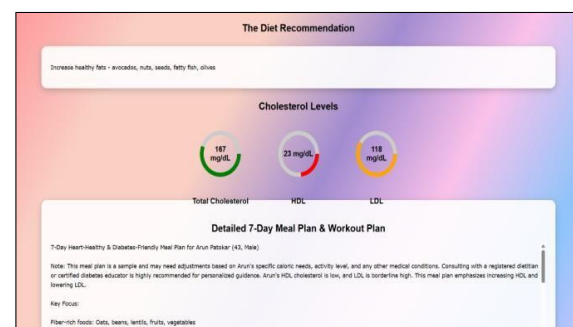
Fig. 1 Certified Dietary Guidelines Based on BMI, Gender, Medical Conditions, and Age

Dietary guidelines vary based on individual factors such as BMI, gender, medical conditions, and age to ensure optimal health. Underweight individuals should focus on nutrient-dense, high-calorie foods, while overweight or obese individuals benefit from portion control, fiber-rich diets, and regular exercise. Males require higher protein and calorie intake for muscle maintenance, whereas females need increased iron (pre-menopause), calcium, and vitamin D for bone and reproductive health. Specific medical conditions demand tailored diets—hypertension management involves a low-sodium DASH diet, diabetes care emphasizes glycemic control and fiber intake, and hyperlipidemia requires reducing saturated fats while increasing omega-3s. Additionally, PCOS patients benefit from low-GI foods and balanced protein, osteoporosis prevention relies on high calcium and vitamin D intake, and kidney disease management necessitates sodium, phosphorus, and potassium restrictions. Age also plays a key role—children need balanced nutrition for growth, adolescents require more protein and calcium, adults should focus on portion control, and seniors benefit from higher fiber, protein, and bone-supporting nutrients. These guidelines help individuals maintain health and prevent diet-related complications.

Results and Discussion

Initial implementation demonstrates that OCR and NLP techniques accurately extract cholesterol-related parameters from medical reports and ML models efficiently classify dietary needs. The web interface provides an intuitive user experience for report uploads, diet suggestions, and progress tracking. Future work

will involve improving model accuracy and expanding the system's database for more diverse dietary recommendations.



Kidney Disease and Nutrition. Retrieved from:
<https://www.niddk.nih.gov/healthinformation/kidney-disease/chronic-disease-nutrition>

National Osteoporosis Foundation (NOF) (2021). Bone Health Guidelines. Retrieved from: <https://www.nof.org/>