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## Role of Intermittent Fasting in Reducing Cardiovascular Diseases [Article ID: SIMM0343]

Kumari Pallavi, Prof Mukta Singh Banaras Hindu University, Varanasi

### Introduction Cardiovascular diseases

Cardiovascular diseases are multifactorial disorders that represent the leading causes of death worldwide according to the World Health Organization (WHO) (Benjamin et al.. 2017). The physiopathology of cardiovascular diseases, mainly caused by atherosclerosis, includes remodelling of blood vessels that can result in blood flow restrictions in the heart and the nervous system. Cardiovascular diseases comprise several disorders such as coronary artery diseases, stroke, hypertension, heart failure, congenital heart diseases, and vascular diseases. The main risk factors for diseases are cardiovascular obesity, diabetes, cigarette smoking, a sedentary unhealthy lifestyle, and genetic and predisposition (Benjamin et al., 2017). According to WHO, an estimated 17.9 million people died from cardiovascular diseases (CVDs) in 2019, representing 32% of all deaths worldwide. Roughly 7.4 million of these deaths (17.9 million) are thought to be caused by coronary heart disease, and 6.7 million by stroke (Hajar, 2016). Among CVDs, strokes and heart attacks are usually acute events, stroke is

the second cause of death worldwide (Avan, 2017).

Several risk factors, such as family history, high cholesterol, high blood pressure, and being overweight or diabetic, have been linked to the development of CVD, but a significant number of people who have few or no identified risk factors will also develop CVD. Most cardiovascular diseases can be prevented by addressing behavioural risk factors, such as tobacco use, unhealthy diet and obesity, physical harmful inactivity, use of alcohol. diabetes. hypertension, and hyperlipidaemia. This fact has led researchers to look for the risk factors that might be either causing CVD or that could be used to determine lifestyle changes and/or treatments that could reduce a person's risk. People with cardiovascular disease or who are at high cardiovascular risk need early detection and management using counselling and medicines, as appropriate (Islam et al., 2023).

### **Intermittent fasting**

Fasting in humans takes place by eating no more than minimal amounts of food and calories for a period ranging from 12 h to 3 weeks (Longo and Mattson, 2014). Fasting has been used for therapeutic, ethical, religious, political, and during food scarcity. Fasting is common in humans, animals, and lower eukaryotes. The health benefits of fasting were identified and recorded from the early days of ancient Greek civilization. Fasting is part of our species' history, as hunters had a steady food supply (Visioli et al., 2022).

Intermittent fasting is a dietary pattern that involves alternating between periods of fasting and eating (Vasim et al., 2022). The most common type of intermittent fasting studied occurs during the holy month of



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Ramadan when millions of Muslims abstain from calorie and water intake from dawn to sunset. On average, Ramadan lasts for 12 h of fasting and 12 h of non-fasting (Trepanowski and Bloomer, 2010). Other types of intermittent fasting include alternate-day fasting, time-restricted eating (the 16/8 or 14/10 method), 5:2 intermittent fasting, and eat-stop-eat fast (Vasim et al., 2022; Santos and Macedo, 2018).

The metabolic health benefits of intermittent fasting include weight loss, of cholesterol, decreased levels triglycerides, blood sugar, and blood pressure, improved cardiovascular health, and protection against neurodegenerative diseases such as Alzheimer's and Parkinson's (Vasim et al., 2022; Santos and Macedo, 2018; Barnosky et al., 2014). Obesity, type 2 diabetes mellitus (T2DM), and hypertension are the most important risk factors for cardiovascular disease and are the most common causes of morbidity and mortality (Nam et al., 2020; Huh and Nam 2021).

Intermittent	fasting	may	impact
cardiovascular	health:	° 2	

- Weight control: Intermittent fasting can aid in weight loss and management, which is essential for cardiovascular health. Excess body weight increases the chance of developing cardiovascular disorders such as hypertension, coronary artery disease, and stroke.
- Improvement in metabolic health: Intermittent fasting may enhance insulin sensitivity and manage blood sugar levels. This may help prevent or treat disorders such as type 2 diabetes, which is a risk factor for cardiovascular disease.

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- Reduced inflammation: Chronic inflammation is linked to the development and progression of cardiovascular illnesses. Some research show that intermittent fasting may lower inflammatory indicators in the body, potentially benefiting cardiovascular health.
- Improvement in lipid profile: Intermittent fasting may improve
- lipid profiles by lowering triglycerides and LDL cholesterol while raising HDL cholesterol. Maintaining a healthy lipid profile is critical for cardiovascular health.
- Blood pressure regulation: According to some studies, intermittent fasting may help manage blood pressure, which is an important aspect in avoiding cardiovascular.

# Dietary influences on cardiovascular diseases

Structured dietary intervention plays a crucial role in preventing and managing these cardio metabolic diseases. Major clinical practice guidelines commonly recommend losing more than 5% of body weight and reducing total caloric intake (Kim et al., 2021; Shim et al., 2020). Nevertheless, reducing total caloric intake enough to lose weight requires tremendous effort, and maintaining it over the long term is much more challenging. Alternatively, carbohydrate-restricted diets and intermittent fasting (IF) are emerging as relatively easy and effective popular dietary regimens for reducing body weight (Kim, 2021). Obesity, T2DM, and hypertension metabolic constitute syndrome, and glucose-stimulated hyperinsulinemia and insulin resistance are major contributors to the pathogenesis of these diseases (Zhang et al., 2021). Reducing carbohydrate that is



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absorbed in the form of glucose or fructose and leading to immediate hyperglycaemia may help prevent and improve these conditions (Volek et al., 2008).

### Conclusion

Intermittent fasting may have a favourable impact on cardiovascular risk factors such insulin sensitivity, inflammation, and lipid profile alterations. These parameters are critical in the prevention of cardiovascular disease. Thus, innovative and mechanismbased nutritional treatments must be developed and evaluated in order to provide viable alternatives or complements to standard of care therapies.

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