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FOOD CONSUMPTION PATTERN AND RISK OF MORTALITY DUE TO NON-COMMUNICABLE DISEASES

Western type diet and obesity are important causes of mortality in both developing and developed countries (1-5). Mediterranean type diets are protective against obesity as well as deaths, due to non-communicable diseases (NCDs) (1,5). Although whole grains, fruits, vegetables and nuts have been found to protect against mortality due to NCDs, white rice, refined wheat flour and American corn can predispose metabolic syndrome (5-17). Cohort studies showed that whole grain bread although better than white bread, can also predispose metabolic syndrome. This review aims to select protective foods that can be used to develop a package of meals which may be rich in protective nutrients and poor in energy density for prevention of NCDs (1-5). Recently, some inexpensive traditional foods; millets, soya bean, red rice, flax seeds, peanuts, rapeseed oil, rice bran oil, spices and newly developed foods; have been found to be protective against NCDs (6-17). These foods are rich sources of proteins, fatty acids, complex carbohydrates, flavonoids, omega-3 fatty acids, calcium, iron and fiber that are important in the prevention of NCDs.

The Seven Countries Study showed that traditional Japanese and Mediterranean diets are protective against cardiovascular diseases (CVDs). The Japanese diet is considered the healthiest because it provides Japanese populations with the highest longevity and health. DASH and Mediterranean-style diets are also considered healthy diets, although the Indo-Mediterranean-style diet may provide better protective effects among patients with CVDs compared to other diets. The concept of the Indo-Mediterranean type of diet was developed after examining its role in the prevention of CVDs in India, the value of which was confirmed by a landmark study from France: the Lyon Heart Study. These workers found that consuming an alpha-linolenic acid-rich Mediterranean-style diet can cause a significant decline in CVDs and all-cause mortality. Later in 2018, the PREDIMED study from Spain also reported that a modified Mediterranean-style diet can cause a significant decline in CVDs, type 2 diabetes mellitus (T2DM), and cancer. The Indo-Mediterranean diet may be superior to DASH and Mediterranean diets because it contains millets, porridge, and beans, as well as spices such as turmeric, cumin, fenugreek, and coriander, which may have better anti-inflammatory and cardioprotective effects. These foods are rich sources of nutrients, flavonoids, calcium, and iron, as well as proteins, which are useful in the prevention of under- and overnutrition and related diseases. It is known that DASH and Mediterranean-style diets have a similar influence on CVDs. However, the Indo-Mediterranean-style diet may be as good as the Japanese diet due to improved food diversity and the high content of antioxidants.

The role of Mediterranean style foods are already proven in the prevention of NCDs (18-32). However, these foods are expensive and are not within the reach of people of lower social classes 3-5 in most countries of the world. Cohort studies and randomized, controlled trial have demonstrated that whole grain can protect against cardiometabolic diseases (CMDs). Therefore there is need to develop new blend of foods using inexpensive foods.

1. Whole Millets flour; 50-60%, 2. Whole Soya bean flour, 20-30%,
3. Whole Red rice flour or grains in the bread as such 10-15%,
4. Flex seeds and mixture of pea nuts in pieces; 5-10%
5. Rape seed oil/olive oil/ or blend of (Olive oil+flex seed, rape seed, sesame, rice bran oil)
6. add coffee or cocoa to taste, 7. Spices to taste including cinnamon, fenugreek, cumin, coriander, turmeric (50-100g/Kg of flour), Glycemic index should be lower than 50. Biochemical content of protein, fatty acids, proteins, flavonoids need to be examined in the

final food product. The effects of final food product should be examined on various biomarkers of health among people with metabolic syndrome as well as among healthy subjects.

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