

### From the Editor's Desk

#### Dear Colleagues,

May 17th is celebrated as World Hypertension Day which is an opportunity to emphasize the need to work on preventing and controlling Hypertension, in order to prevent deaths from cardiovascular diseases. The stresses of life take infinitely varied forms and Hypertension is partly a manifestation linked to these.

At the global level, it is estimated that of the people with Hypertension, only 57% know of their condition. Out of this, 40.6% receive anti-hypertensive drug treatment but only 13.2% achieve controlled blood pressure figures.

Hypertension is one of the most pressing individual and public health problems of this Century and is the main risk factor for suffering and dying as a result of premature cardiovascular events. It is also the main cause of ischemic heart disease, kidney damage and stroke.

Diet is the key to its management as dietary intervention can help to alleviate the symptoms of Hypertension and maintain normal blood pressure. Lifestyle modifications such as decreased salt intake, losing weight, reducing stress and

alcohol consumption, stopping smoking and exercising regularly lower the blood pressure remarkably. The earliest documented statement which relates salt to Hypertension is that of Huang Ti Nei Ching Su Weir from Wan Ping's translation (AD 762) which states that 'if large amounts of salt are taken, the pulse will stiffen or harden' Hypertension was earlier called the 'hard pulse disease'.

DASH (Dietary approaches to stop Hypertension) eating plan is recommended for Hypertension patients. It focuses on heart-healthy foods which are low in sodium, fat and cholesterol whereas rich in fiber, nutrients and protein. Nutritional advice and constant monitoring are the mainstay of a hypertensive patient. Education programmes should be designed to encourage individuals to know of their blood pressure levels, stay in a physician's care if hypertensive, achieve and maintain ideal weight, exercise regularly and reduce dietary sodium. So dietitians should follow a multidisciplinary approach to care, to maintain blood pressure by diet diversification, promote a sense of well being and provide such food choices which do not develop any food cravings in the patient.

*Madhu Kaul*

### CHAPTER ACTIVITIES (NOV. 2017-APR. 2018)

- November '17** – World Diabetes day (14th Nov.) was observed on 18th Nov. by conducting a CNE at Govt. Home Science College. The theme was "Management in Diabetes Mellitus" and the key speakers were Mrs. Shilpa Joshi from Mumbai and Ms. Harleen Bakshi from Chandigarh.
- January '18** – Dietetics day (10th Jan) was observed on 16th Jan at Govt. Multi Speciality Hospital, Sec. 16, Chandigarh, with the theme 'Ensuring Safe and Nutritious Food for all'. The key speakers were Dr. Poonam Khanna, Asstt. Prof, PGIMER, Chandigarh and Mr. Sukhwinder Singh, from Food Safety Cell, Chandigarh administration.
- Demonstration of detection of adulterants in food was also conducted.
- April '18** – The annual general body meeting was conducted on April 21st at GMSH, Sec. 16, Chandigarh. The AGBM of the IDACON 2018 held at Kolkata was read out by Mrs. Madhu Sharma (Chapter President) and various policies highlighted within that. Reports of the Secretary (Mrs. Sonia Gandhi) and the Treasurer (Mrs. Ramandeep) were read out. Various issues regarding RD exam criteria and eligibility raised by the members were clarified. The meeting ended with a vote of thanks.

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## NUTRITIONAL MANAGEMENT OF HYPERTENSION

*Dt. Sunita Malhotra RD, Chief Dietician,  
Department of Dietetics, PGIMER, Chandigarh*

**INTRODUCTION :** Hypertension (HTN) or elevated blood pressure (BP) is a major global health problem that affects more than one billion people worldwide. Scientists are now claiming that 1 in 3 adults in the world will have high blood pressure in 2025 when the total number of hypertensive people will increase by about 60% to a total of 1.56 billion as the proportion of elderly people will increase significantly. HTN is also the modifiable risk factor for heart disease, stroke, renal disease, retinopathy and is the most important risk factor for death, estimated to be responsible for 9.4 million deaths & for 7 percent people with disability adjusted life years (DALYs) globally.

Hypertension is generally called a silent killer and most

of the patients are accidentally detected to have hypertension, when they are admitted to the hospital for unrelated disease or are subjected to preoperative check up when their blood pressure is examined. Many patients are diagnosed when they seek medical advice due to target organ damage. The World Health Organization (WHO) estimates that hypertension is responsible for at least 51% of deaths due to stroke and 45% deaths due to heart diseases.

**DEFINITION OF HYPERTENSION :** According to Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC 7), identify an individual with hypertension if the systolic blood pressure (SBP) is > 140 mm Hg and/or diastolic blood pressure (DBP) is > 90 mm Hg.

### Blood Pressure Classification by JNC7 and 2017 ACC/AHA Hypertension Guidelines<sup>1</sup>

| Systolic, Diastolic Blood Pressure (mm Hg) | JNC7                 | 2017 ACC/AHA                    |
|--|----------------------|---------------------------------|
| <120 and <80                               | Normal BP            | Normal BP                       |
| 120-129 and <80                            | Prehypertension      | Elevated BP                     |
| 130-139 or 80-89                           | Prehypertension      | Stage 1 hypertension            |
| 140-159 or 90-99                           | Stage 1 hypertension | Stage 2 hypertension            |
| > 160 or > 100 / 180 or 120                | Stage 2 hypertension | Stage 2 hypertension/HTN Crisis |

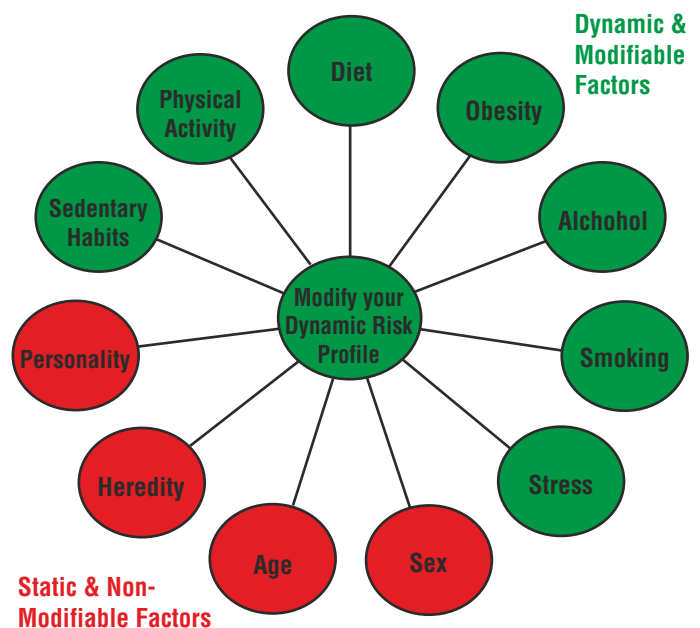
American College of Cardiology(ACC) , American Heart Association(AHA)

### RISK FACTORS CAUSING HYPERTENSION :

Elevated Blood pressure results from environmental factors, genetic factors and interaction among these factors. Risk factors for hypertension may be classified as : Modifiable or Non-modifiable risk factors. Modified risk factors can be changed to prevent HTN, whereas Non-modifiable factors can not be changed.

Modifiable risk factors are Body weight, Sodium chloride intake, Alcohol intake, Physical activity, Psycho-social factors & Socioeconomic status, Hormonal contraceptives.

Non-modifiable risk factors are Age, Sex/gender, Heredity, Ethnicity/ race.



**TYPES OF HYPERTENSION :** Hypertension is classified in two categories i.e. Primary (Essential) or Secondary.

Primary HTN is when there is no identifiable cause of high blood pressure. It tends to develop gradually over many years and is linked to genetics, poor diet, lack of exercise and obesity. Generally primary hypertension accounts for 90-95% of adult cases.

Secondary Hypertension is caused due to some underlying conditions that affect kidneys, heart, arteries or endocrine system. Secondary hypertension accounts for 2-10% of cases. Also this type of hypertension can occur during pregnancy.

**CLINICAL MANIFESTATIONS :** Although HTN does not show any symptom, but some of the symptoms mentioned below are present in persons suffering from extreme high blood pressure: Headache, Dizziness, Fatigue, Shortness of breath, Chest pain and in severe cases, epistaxis or blurred vision and palpitation of heart and nose bleed.

**CONSEQUENCES OF HYPERTENSION :** High BP is a recognized strong risk factor for many catastrophic health problems. If not properly treated, high blood pressure can damage the heart and circulation, lungs, brain, and kidneys without causing noticeable symptoms. Untreated Hypertension leads to: Increased workload for heart and damage to arteries, atherosclerosis, coronary heart diseases & congestive heart failure, cerebrovascular disease-stroke, transient ischemic attacks (TIAs), damage to Kidneys, and micro vascular haemorrhage in brain and eyes. Hypertension is also associated with the presence of other risk factors like obesity, insulin resistance and lipid abnormalities which constitutes the metabolic syndrome.

**MANAGEMENT OF HYPERTENSION :** Initial management of hypertension uses a two-pronged approach, with emphasis on Pharmacotherapy and Nonpharmacotherapy. Non-pharmacological therapy(Lifestyle modifications) has an important role in both non-hypertensive & hypertensive individuals. Life

style modifications have the potential to prevent hypertension as well as to reduce BP and lower the risk of BP related complications. The following non-pharmacotherapeutic interventions are :

**NUTRITION :** the following Dietary changes are of paramount importance : Reduction of salt intake to an average of not more than 5 g per day (WHO, 2012), moderate fat intake, following the DASH diet plan (Dietary approaches to stop hypertension), the avoidance of a high alcohol intake, and restriction of energy intake appropriate to body needs.

**WEIGHT REDUCTION :** The prevention and correction of over weight/obesity is a prudent way of reducing the risk of hypertension and indirectly coronary heart disease. The greater the weight loss, the greater the reduction in blood pressure. Meal patterns that rely heavily on processed foods containing more fats, sugar and sodium, lead to steady weight gain and high BP. 400gm of Vegetables & fruits (as recommended by WHO) is helpful in reducing weight and thereby blood pressure.

**REDUCING SALT INTAKE :** Hypertension is predominantly observed in societies with average sodium chloride intake of >100 mmol / day and very rare in populations consuming <50mmol/day. A study conducted by George Institute for Global health found that salt intake of Indians above 19 years was 10.98 gm as against the WHO recommendations of 5 gm per day.<sup>2</sup> The American Heart Association (AHA) recommends eating less than 1,500 milligrams of sodium per day, European Society of Hypertension (ESH) and the European Society of Cardiology (ESC) guidelines also recommend a low-sodium diet (limited to 5 to 6 g salt per day) as well as reducing BMI to 25 kg/m<sup>2</sup> and waist circumference (to < 102 cm in men and < 88 cm in women).<sup>3</sup>

**TIPS FOR REDUCING SODIUM :** To reduce salt intake, people should choose foods low in salt and limit the amount of salt added to food. Read labels & look for foods with ≤ 400mg of sodium/ serving, to minimize sodium in

**Diet related lifestyle modifications that effectively lower BP(JNC-7)**

| Lifestyle Modifications                      | Recommendations   |
|--|---|
| Weight loss                                  | Maintain normal body weight (body mass index 18.5-24.9 kg/m <sup>2</sup> ). waist circumference less than 94 cm (men) or less than 80 cm (women)            |
| Reduce salt intake                           | Reduction in sodium intake to less than 2.4 grams per day   |
| DASH-type dietary pattern                    | Consume a diet rich in fruits and vegetables (8-10 serving/d), rich in low fat dairy products (2-3 serving/d) and reduced in saturated fat and cholesterol. |
| Moderation of alcohol intake<br>Quit smoking | For those who drink alcohol, consume < 2 alcoholic drinks/d (men) and < 1 alcoholic drink/d (women)   |
| Physical activity                            | Regular aerobic physical activity (atleast 30 min/day, most days of the week)   |

Source : <http://hyper.ahajournals.org>.

your diet. Some of the tips given below will help to reduce sodium in the diet.

- ❖ Cook with as little salt as possible, use herbs and spices and salt free seasonings on the table and while cooking. Do not add salt to foods at the table.
- ❖ Choose convenience and processed foods low in salt, limit salt based condiments, avoid sauces, *papad*, *vadi*, savoury items to reduce sodium.
- ❖ Rinse canned foods with fresh water to reduce the sodium content.

**INCREASING POTASSIUM IN THE DIET :** Potassium balances fluids in the body, is vital for normal heart function and aids in muscle contractions. Potassium and sodium fluctuate antagonistically - a decrease in potassium leads to sodium retention, whereas increase in potassium leads to sodium excretion, thereby promoting diuresis and natriuresis. High potassium intake reduces peripheral vascular resistance by direct anterior dilation, increased loss of water and sodium from the body.

The Institute of Medicine has recommended a potassium intake of 4700 mg (120 mmol) per day as adequate intake for all adults. Sources of potassium rich foods are vegetables (leafy vegetables, potato, tomato & brinjal), fruits (apricots, sapota, banana, citrus juice), dairy products, plain unsalted nuts & legumes (e.g. beans, lentils, dried peas).

**INCREASE INTAKE OF FIBER :** Increasing consumption of dietary fiber is accompanied by a reduction in systolic and diastolic blood pressure. Various studies have been found to have an inverse association between blood pressure and fiber intake. Plant foods should be preferred as they are rich sources of fiber, have less fat and sodium as there is no fiber in meat, dairy, sugar or white foods. (bread, rice, maida). Desirable level of dietary fiber intake is 30-40g/day.

**FOLLOW THE DASH DIET PATTERN :** The dietary approaches to stop Hypertension (DASH) trial was a multicenter, randomized clinical trial that examined the effects of dietary patterns on blood pressure. DASH diet is rich in fruits, vegetables and fat free or low fat dairy foods, whole grains, fish, poultry, beans, seeds and nuts. It also contains less salt and sodium, sweets, added sugars and sugar- containing beverages, fats and red meats. This diet helps to lower blood pressure and also has suitable effects on blood lipids.

**LIMITING ALCOHOL CONSUMPTION :** This is an important lifestyle modification for reducing blood pressure. Alcohol raises blood pressure and also can harm vital organs like liver, brain and heart. For persons who consume alcohol the recommendations are, that men should have no more than two alcoholic drinks per day and women no more than one drink per day as supported by the AHA 2006 scientific statement of hypertension

management.

**QUIT SMOKING :** Smoking is a major risk factor leading to HTN and heart disease. Nicotine and Carbon monoxide present in smoke damages heart & blood vessels. Smoking also increases blood viscosity, clot formation and speeds up the process of hardening of the arteries. In patients with coronary heart disease, smoking cessation is associated with a 36% reduction in the risk of all-cause mortality.

**PHYSICAL ACTIVITY :** The role of physical activity for treatment of hypertension is well known. Regular physical activity enhances sense of well being, improves functional health status, & reduces risk of cardiovascular disease and mortality.

Diet, Exercise and Weight loss Intervention Trial (DEW-IT) showed that exercise incorporated lifestyle intervention can result in significantly better BP control among patients taking Pharmacotherapy for Hypertension. 30-45 minutes of moderate level activity on most days of week can lose/maintain weight & helps to lower Blood pressure.

**YOGA/ MEDITATION :** Yoga is a beneficial multifunctional therapeutic modality in the treatment of variety of psychological and medical conditions such as depression, anxiety, post traumatic stress disorder, hypertension, cardiovascular diseases and COPD. Meditation helps to calm the body and soul and relaxation techniques such as massaging relieves stress. It might be that a reduction in stress and stimulation of the body might impart physiological benefits, says the American Heart Association.

## CONCLUSION :

Hypertension is a major risk factor and a powerful predictor of cardio-vascular morbidity and mortality.

The main thrust of primary prevention of hypertension includes a sustained effort on lifestyle modifications. Established nutrition recommendations are proven to be helpful in reducing blood pressure in general populations and thus decrease the load of chronic diseases such as cardiovascular, cerebrovascular and renal which are associated with hypertension.

## REFERENCES :

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3. Dietary sodium intake and arterial blood pressure. Dumler F. J Ren Nutr. 2009 Jan; 19(1):57-60.



## DASH DIET - A LIFELONG APPROACH TO A HEALTHY HEART

*Dr. Anjali Dewan, Associate Professor & Head,  
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DASH stands for Dietary Approaches to Stop Hypertension. The DASH diet is a lifelong approach to healthy eating that is designed to help treat or prevent

hypertension. This diet encourages the patients to reduce the sodium in their diet and eat a variety of foods rich in nutrients that help lower blood pressure, such as potassium, calcium and magnesium. The DASH diet emphasizes the intake of vegetables, fruits and low-fat dairy foods, moderate amounts of whole grains, fish, poultry, nuts, and small amounts of sugar and fats.

In addition to the standard DASH diet, there is also a lower sodium version of the diet. One can choose the version of the diet that meets one's health needs:

- ❖ **Standard DASH diet:** It provides up to 2,300 milligrams (mg.) of sodium a day.
- ❖ **Lower sodium DASH diet:** It provides up to 1,500 mg of sodium a day.

The DASH diet is low in saturated fat, cholesterol and total fat. Recommended servings from each food group for the 2,000-calorie-a-day DASH diet are :

### ❖ **Whole Grains: 6 to 8 servings a day**

Grains include bread, cereal and pasta. Examples of one serving of grains include 1 slice whole-wheat bread or 1/2 cup cooked cereal, rice or pasta. One should use brown rice instead of white rice, whole-wheat pasta instead of regular pasta and whole-grain bread instead of white bread.

### ❖ **Vegetables: 4 to 5 servings a day**

Tomatoes, carrots, broccoli, sweet potatoes, greens and other vegetables are full of fiber, vitamins, and minerals such as potassium and magnesium. Examples of one serving include 1 cup raw leafy green vegetables or 1/2 cup cut-up raw or cooked vegetables.

### ❖ **Fruits: 4 to 5 servings a day**

Many fruits need little preparation to become a healthy part of a meal or snack. Examples of one serving include one medium fruit, 1/2 cup fresh, frozen or canned fruit, or about 120 ml. of juice.

### ❖ **Dairy: 2 to 3 servings a day**

Milk, yogurt, cheese and other dairy products which are low in fat or fat-free should be selected, otherwise they can be a major source of saturated fat. Examples of one serving include 1 cup skimmed milk, 1 cup low fat yogurt, or about 50 gm. of cottage cheese.

### **Lean meat, poultry and fish: 2 or less servings a day :**

Cutting back on the meat portions and including green vegetables in the diet is beneficial. Trim away skin and fat from poultry and meat and then bake, broil, grill or roast instead of frying in fat. Heart-healthy fish, such as salmon, herring and tuna should be a part of the diet of non-vegetarians.

### **Nuts, seeds and legumes: 4 to 5 servings a week**

Almonds, sunflower seeds, kidney beans, peas, lentils and other foods in this family are good sources of magnesium, potassium and protein. Serving sizes are small and are intended to be consumed only a few times a week because these foods are high in calories. Examples of one serving include 1/3 cup nuts, 2 tablespoons seeds, or 1/2 cup cooked beans or peas. Soyabean based product such as tofu can be a good alternative to meat because it contains all the essential amino acids.

### **Fats and oils: 2 to 3 servings a day**

The DASH diet maintains healthy balance by limiting total fat to less than 30 percent of daily calories from fat, with a focus on the healthier monounsaturated fats. It helps to keep our daily saturated fat to less than 6 percent of the total calories by limiting use of meat, butter, cheese, whole milk, cream and eggs in the diet. Avoid trans fat, commonly found in such processed foods as baked goods and fried items.

### ❖ **Sweets: 5 servings or fewer a week**

The patient does not have to leave sweets entirely while following the DASH diet. While eating sweets, choose those that are fat-free or contain less fat such as fruit ices, jelly beans, hard candy, or low-fat biscuits.

### **DASH diet: Alcohol and caffeine**

The Dietary Guidelines recommend that for persons who consume alcohol, men should not consume more than two drinks a day and women to one or less. The DASH diet does not address caffeine consumption.

### **DASH diet and weight loss**

While the DASH diet is not a weight-loss program, one may lose unwanted weight because it can help guide us towards healthier food choices.

### **Strategies to get started on the DASH diet**

There are certain strategies which can help a patient incorporate DASH diet but for this change, counseling by a dietitian is mandatory. These strategies are as follows: Change gradually, Reward successes and forgive slip-ups, Physical activity, Counseling as an intervention.



## PREVALENCE OF HYPERTENSION IN INDIA

*Dr. Sapna Nanda, Associate Professor, Govt. College of Education, Chandigarh*

- ❖ Hypertension is the most prevalent chronic disease in India.
- ❖ Due to its heightened risk the recommended targets for blood pressure are lower for all Indians <130/85 and <120/80 for those with diabetes or heart failure<sup>1</sup>.
- ❖ The prevalence of hypertension ranges from 20-40% in urban adults and 12-17% among rural adults. The number of people with hypertension is projected to increase from 118 million from the year 2000 to 214 million in the year 2025, with nearly equal numbers of men and women<sup>2</sup>.
- ❖ A survey of 26,000 adults in South India showed a hypertension prevalence of 20% (men 23% and women 17%) but 67% of those with hypertension were unaware of their diagnosis. Studies show that for every known person with hypertension, there are two persons with either undiagnosed hypertension or pre-hypertension<sup>3</sup>.
- ❖ Reducing blood pressure can decrease cardiovascular risk and this can be achieved by lifestyle measures in mild cases and should be the initial approach to hypertension management in all cases. This includes dietary interventions, weight reduction, tobacco cessation and physical activity<sup>4</sup>.
- ❖ A number of safe and effective medications are available for treatment of high blood pressure. These include older molecules such as thiazide diuretics, beta-blocking agents, calcium channel blockers (CCB) and newer molecules, such as, angiotensin converting enzyme (ACE) inhibitors, and angiotensin receptor blockers (ARB). In view of the recent clinical trials data, some international guidelines suggest that CCB, ACE inhibitors or ARB and not beta-blockers or diuretics should be the initial therapy in hypertension management<sup>4</sup>. The former however, are much more expensive and beyond the affordability in many poor income countries.

### REFERENCES

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4. Gupta, R. and Guptha, S. (2010). Strategies for initial management of hypertension. Indian J Med Res. 132 (5):531-542.

## QUIZ



- Q1. The DASH diet
  - (a) is high in fiber
  - (b) is a low-calcium diet
  - (c) includes very few fruits and vegetables
- Q2. Arteries damaged by atherosclerosis
  - (a) easily stretch and spring back
  - (b) are resistant to the entry of lipids
  - (c) become stiff
- Q3. Hyperplastic arteriolosclerosis is :
  - (a) characteristic of malignant hypertension
  - (b) characteristic of benign hypertension
  - (c) associated with benign nephrosclerosis
- Q4. Hyaline arteriolosclerosis is a characteristic of :
  - (a) malignant hypertension
  - (b) benign hypertension
  - (c) hyperplastic hypertension
- Q5. Which amongst there is known to lower B.P.
  - (a) Carotenoids
  - (b) Flavonoids
  - (c) Glucosinolates
- Q6. Risk factors for hypertension include:
  - (a) young age
  - (b) iron deficiency
  - (c) family history
- Q7. Which one of the following is a major complication of hypertension?
  - (a) aortic regurgitation
  - (b) cerebral accidents
  - (c) none of the above
- Q8. Hypertension can be associated with:
  - (a) pheochromocytoma
  - (b) adrenal cortical adenoma
  - (c) both
- Q9. The cholesterol content of a single egg yolk varies between :
  - (a) 100 – 150 mg
  - (b) 150 – 200 mg
  - (c) 200 – 250 mg
- Q10. Healthy diet and regular exercise
  - (a) elevates blood levels of triglycerides
  - (b) lowers the level of LDL in the blood
  - (c) lowers the level of HDL in the blood

**Ms. Anshu Maggo, M.Sc (DFSM), PGDND**

Answers : 1 (a) 2 (c) 3 (a) 4 (b) 5 (b) 6 (a) 7 (b) 8 (c) 9 (b) 10 (c)

## RESEARCH OF INTEREST



### Effects of a nationwide strategy to reduce salt intake in Samoa

Trieu, Kathy; Ieremia, Merina; Santos, Joseph, Neal, Bruce, Woodward, Mark, Moodie, Marj; Bell, Colin; Snowdon, Wendy; Faumuina, Taiaopo; Webster, Jacqui

*Journal of Hypertension: January 2018 - Volume 36 - Issue 1 - p 188-198*

**BACKGROUND :** Salt reduction is one of the most cost effective intervention for the prevention of cardiovascular diseases including hypertension, but very few studies are available regarding the effectiveness of national strategies in low or middle income countries.

**AIM :** This study aimed to examine the effectiveness of a 18 month nation wide reduction strategy in Samoa

**METHODOLOGY :** Two nationally representative cross sectional surveys of adults aged 18- 64 years, measuring 24 h urinary salt excretion and salt related knowledge, attitudes and behavior, were conducted before (2013) and after (2015) the intervention.

**RESULTS :** There were 234 participants at baseline (response rate 47%) and 479 at 18 months (response rate 61%). There was no change in mean population salt intake between 2013 (7.31g/d) and 2015 (7.50g/d) (0.19, 95% CI -0.50 to 0.88; P=0.588). There were significant changes in the proportion of the population who always or often add discretionary salt when eating (-16.2%, P= 0.002), the proportion who understood the adverse effects of salt (+9.0%, P =0.049) and the proportion using one or more methods to control their salt intake (+20.9%, P<0.001). A total of 73% reported that they had heard or seen the salt reduction messages.

**CONCLUSION :** With widespread awareness of salt reduction message and some improvements in salt related knowledge and behaviors following intervention, Samoa is now well positioned to implement much needed structural initiatives or policies to reduce salt in food supply.

### Effect of foxtail millet protein hydrolysates on lowering blood pressure in spontaneously hypertensive rats.

Chen J, Duan W, Ren X, Wang C, Pan Z, Diao X, Shen Q

*Eur J Nutr. 2017 Sep; 56 (6):2129-2138. doi: 10.1007/s00394-016-1252-7. Epub 2016 Jun 25*

#### BACKGROUND :

Millets in general and foxtail millet in particular is considered to have many health benefits especially related to cardio vascular diseases, diabetes and hypertension. It is traditionally used as porridge and snacks, being high in fiber, proteins and minerals.

#### AIM :

The objective of this study was to determine the effect of foxtail millet protein hydrolysates on lowering blood pressure in spontaneously hypertensive rats (SHRs).

#### METHODS :

The protein of foxtail millet after extruding or fermenting and the raw foxtail millet was extracted and hydrolyzed by digestive protease to generate angiotensin-converting enzyme (ACE) inhibitory peptides. The potential antihypertensive effect of protein hydrolysates from foxtail millet in SHRs was investigated.

#### RESULTS :

After 4 weeks of treatment with 200 mg peptides/kg of body weight of protein hydrolysates, blood pressure was lowered significantly, and the raw and extruded samples were more effective than the fermented samples. The serum ACE activity and angiotensin II levels in the treatment groups were significantly lower than that of the control. The percent heart weight decreased in the treatment groups.

#### CONCLUSION :

Thus, ingestion of foxtail millet protein hydrolysates especially for the raw and extruded hydrolysates may ameliorate hypertension and alleviate related cardiovascular diseases.

**Dt. Madhu Sharma**, Sr. Dietician (Ex PGI)  
President, IDA, Chandigarh Chapter

# CHAPTER ACTIVITIES

## WORLD DIABETES DAY CELEBRATED AT GOVT. HOME SCIENCE COLLEGE, SEC. 10, CHANDIGARH



## DIETETICS DAY CELEBRATED AT GOVT. MULTI SPECIALITY HOSPITAL, SEC. 16, CHANDIGARH





## NUTRITIOUS RECIPES

### OATS PANCAKE

#### Ingredients:

|              |   |       |
|--------------|---|-------|
| Ground Oats  | – | 20 gm |
| Roasted Suji | – | 10 gm |
| Butter Milk  | – | 10 ml |

Chopped Capsicum, Chopped Bell Peppers (Yellow), Chopped Beans, Peas, Chopped Onion – 5 gm each  
 Green Chillies – ½ inch  
 Lemon Juice and Oil – 2 ml each  
 Black Pepper, Garam Masala, Turmeric powder - as per taste

#### Method :

Grind oats into a fine powder. Mix roasted suji and ground oats well. Add turmeric powder, black pepper and garam masala to the mixture. Add butter milk to make a smooth batter. Lastly, add chopped vegetables, onion, green chillies and lemon juice and let it ferment for another 10 minutes. Prepare pancakes from this batter on a non-stick tawa. Cook from both sides with little oil. Serve with mint chutney. (Without Salt)

**No. of Serving : 1**

#### Nutritive Value :

|                          |                   |
|--------------------------|-------------------|
| Energy – 141.5 Kcal      | Protein – 4.5 gms |
| Carbohydrates – 22.4 gms | Fat – 3.7 gms     |
| Potassium – 29.9 mgs     | Sodium – 2.8 mgs  |

### BANANA SMOOTHIE

#### Ingredients :

|                               |   |       |
|-------------------------------|---|-------|
| Ripe Banana                   | – | 15 gm |
| Plain Yoghurt                 | – | 50 gm |
| Chia Seeds                    | – | 10 gm |
| (soaked in water for an hour) |   |       |
| Chopped Dates                 | – | 10 gm |
| (For Garnishing)              |   |       |
| Pomegranate Seeds             | – | 05 gm |
| Almonds                       | – | 02 gm |
| Mint Leaves                   | – | a few |

#### Method :

Mix all above ingredients in a blender. Blend until smooth. Garnish with pomegranate seeds, almonds and mint leaves, and serve chilled.

**No. of Serving : 1**

#### Nutritive Value :

|                         |                   |
|-------------------------|-------------------|
| Energy – 171.5 Kcal     | Protein – 14.5 gm |
| Carbohydrates – 24.5 gm | Fat – 6.6 gm      |
| Potassium – 39.1 mg     | Sodium – 5.4 mg   |

**Mrs. Manisha Arora**

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## KEEP YOURSELF UPDATED

**6-8 July 2018** – 7th Asian Congress of Dietetics, Hong Kong

**30 Sept. – 2 Oct. 2018** – 51st IDACON 2018, Indore, India

**15-17 November 2018** – Golden Jubilee Conference of Nutrition Society of India, Hyderabad, India

**15-18 September 2020** – International Congress of Dietetics ICD 2020, Cape Town, South Africa

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Readers are invited to send contributions for publication in the newsletter, as also information regarding awards/ honours received by the members at the E-mail address :  
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### We are Going Digital

In keeping with the times, we are migrating to the digital mode for publishing this newsletter. In order to continue receiving this newsletter, please share your name, institution and email address with Ms. Sonia Gandhi – sonia.gandhi@fortishealthcare.com

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