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Full Length Research Article

PREVALENCE OF HYPERTENSION AMONG THE ADULTS IN COASTAL AND NON COASTAL AREAS

[1]*Katari Kantha and [2]Arumugam Indira

[1]Department of Community Health Nursing, Narayana College of Nursing, Nellore, Andhra Pradesh, 524003, India

[2]Nursing Dean, Narayana College of Nursing, Nellore, Andhra Pradesh, 524003, India

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ABSTRACT

A cross sectional community based study was conducted in 10 coastal and 10 non coastal areas to assess the prevalence of hypertension in Nellore district. A total of 5000 samples were included in this study. Among this, 2500 samples belongs to coastal areas 2500 samples belongs to non coastal areas. In coastal areas, Among 2500 samples, with regard to blood pressure, 460 (18.4%) samples were found to have stage-1 hypertension, 139 (5.56%) samples had high normal blood pressure, 648 (25.92%) samples were found to be normal, 656 (26.24%) had optimal blood pressure, 112 (4.48%) samples had stage –II hypertension, least samples 15(0.6%) belongs to stage-3 hypertension, 413(16.52%) had grade-1 systolic hypertension, and 57(2.28%) samples had grade-2 systolic hypertension. *510(20.40%) samples were newly diagnosed as hypertensive cases. 103(4.12%) samples were obese. In non coastal areas, Among 2500 samples, with regard to blood pressure most of the samples 1419 (56.7%) were found to have stage-1 hypertension, 637(25.5%) samples had high normal, 198 (8.0%) samples had stage –II hypertension, 161 (6.4%) samples were found to be normal, 67 (2.7%) had optimal, 18 (0.7%) samples under the criteria of stage –III hypertension, 6(0.2%) having grade-1 systolic hypertension, and 4(0.2%) samples having grade-2 systolic hypertension. *1313(52.52%) samples were newly diagnosed as hypertensive cases. 170 (6.8%) samples were obese. The correlation coefficient value is highly significant (0.143) and the standard deviation is 380.87. The above results shown that blood pressure values and obesity are higher in the non coastal areas than in the coastal areas. The variables like age, education, type of family, occupation, income, working members in the family, type of ventilation, sleeping hours, sleeping pattern, exercises, type of oil used, amount of oil used per day per person, type of salt, entertainment, stress, obesity are the influencing risk factors for the development of hypertension among the adults.

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INTRODUCATION

Globally, the overall prevalence of hypertension or raised blood pressure in adults aged 25 and above was around 40% in 2008. Worldwide, hypertension is estimated to cause 7.5 million deaths, about 128% of the total deaths. Hypertension accounts for 57 million disability adjusted life years (DALYS) or 3.7% of total DALYS (Dewailly *et al*., 2002). The World Health Organization (WHO) has estimated that globally about 62% of cerebro vascular diseases and 49% of ischemic heart diseases are attributable to suboptimal blood pressure (systolic > 115 mmHg), with little variation by sex (Alikhani *et al*., 2009).

Corresponding author: Kantha, K, Contact: +91-9441633279,
Narayana College of Nursing, Nellore

One in three adults worldwide has high blood pressure. Hypertension increases the risk of heart attack, stroke, kidney failure and much other associated comorbidity. Treating raised blood pressure and maintaining it below 140/90 mmHg is associated with a reduction in cardiovascular complication. The theme for World Health Day (WHD) 2013 is "high blood pressure". The goal of WHD 2013 is to reduce heart attacks and strokes. Keeping in line with the WHO-Government of India, Country Cooperation Strategy, the WHO 2013 events in India are aimed at raising the awareness amongst national policymakers, program managers and other stakeholders on the need to strengthen the Indian health system to make it competent enough to respond to hypertension and related co morbidities (Anchala *et al*., 2014). Hypertension is a controllable disease and it has been reported that targeted

reductions in people with hypertension are expected to produce large reductions in the burden of cardiovascular disease. According to the seventh report of the Joint National Committee (JNC-7) on prevention, detection, evaluation and treatment of high blood pressure, adoption of healthy lifestyles by all individual is critical for the prevention of high blood pressure. Accurate estimates of hypertension are therefore necessary to plan effective control measures.

Disease Burden /Need for the Study

As per the World Health Statistics 2012, of the estimated 57 million global deaths in 2008, 36 million (63%) were due to non communicable diseases (NCDs). The largest proportion of NCD deaths is caused by cardiovascular diseases (48%). In terms of attributable deaths, raised blood pressure is one of the leading behavioral and physiological risk factor to which 13% of global deaths are attributed (Deepa *et al*., 2003). Hypertension is reported to be the fourth contributor to premature death in developed countries and the seventh in developing countries. Recent reports indicate that nearly 1 billion adults (more than a quarter of the world's population) had hypertension in 2000, and this is predicted to increase to 1.56 billion by 2025 (Kearney *et al*., 2005).

In the INTERHEART and INTERSTROKE study, hypertension accounted for 17.9% and 34.6% of population attributable risk of various cardiovascular risk factors for coronary artery disease and stroke respectively. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India. There is a strong correlation between changing lifestyle factors and increase in hypertension in India (Gupta, 2004). The nature of genetic contribution and gene-environment interaction in accelerating the hypertension epidemic in India needs more studies. Pooling of epidemiological studies shows that hypertension is present in 25% urban and 10% rural subjects in India. At an underestimate, there are 31.5 million hypertensive's in rural and 34 million in urban populations. A total of 70% of these would be Stage I hypertension (systolic BP 140-159 and/or diastolic BP 90-99 mmHg). Recent reports show that borderline hypertension (systolic BP 130-139 and/or diastolic BP 85-89 mmHg) and Stage I hypertension carry a significant cardiovascular risk.

Gandham Bulliyya *et al* was conducted a study on Arterial pressures in fish-consuming and non-fish-consuming populations of coastal south India in 2002 (Bulliyya *et al*., 1999). The results indicate that people who ate fish regularly appeared to have a better cardiovascular risk profile than did non-fish consumers, which is of public health significance. The relationship between fish consumption and blood pressure deserves further studies in normo tensive and hypertensive populations. Even today there is scarcity of the studies in coastal and non-coastal areas of India. With this background, present study has been undertaken to study the prevalence of hypertension.

Statement of The Problem

"A study to assess the prevalence of hypertension among the adults aged 20-60 years in coastal and non coastal areas at Nellore district."

Objectives of the Study

- To assess the prevalence of hypertension among adults of coastal and non coastal areas.
- To identify the risk factors of hypertension among adults of coastal and non coastal areas.
- To compare the prevalence of hypertension between coastal and non coastal areas.
- To find association between the prevalence of hypertension with selected socio demographic variables.

Detailed Research Plan

Research Approach: Quantitative Approach.

Research Design: Descriptive design.

Research Setting: The study was conducted in selected coastal and non coastal areas at Nellore.

- The study was conducted at two parts:
- (1) coastal areas: out of 19areas 10 areas are selected by lottery method.
- (2) Non coastal areas: out of 22 areas 10 areas were selected by the lottery method.
- Coastal area means areas within 2km from mean low water mark (MLWM) or mean high water mark (MHWM).
- Non coastal area means areas far 2km from mean low water mark (MLWM) or mean high water mark (MHWM).
- Coastal areas like: Kotha koduru, Mypadu ,Mahalakshmi puram, Pallepalem, Kudithi palem, Indukur pet, Varukavi padu, Koruturu, Legunta padu, Komarika.
- Non coastal areas: Papi reddy palem, Allipuram, Pallipadu, Mudivarthi, Kakupalem, Inamadugu, Kovur, Vidavaluru, Utukuru, and Vavilla.

Sampling Technique: Convenience sampling technique

Sample Size: 5000 adults aged 20-60 yrs.

Sample Criteria

1. Inclusion Criteria

- Adults of 20-60yrs of age.

2. Exclusion Criteria

- Adults below 20yrs and above 60yrs and
- Adults with acute illness.

Tools for Data Collection

Section A: It deals with demographic data including age, education, type of the family, occupation, monthly income, nature of the work, sleeping hours, exercise type & duration, food pattern, type & amount of oil used for cooking, type & amount of salt used, amount of vegetable used, habits & consumption of fast food, height, weight, BMI, stress, waist circumference, chest circumference, head circumference, mid arm circumference and known hypertensive or not.

Section B: Staging of the blood pressure According to INDIAN HYPERTENSION GUIDELINES-III (IHG-III).

Method of Data Collection

A total of 20 areas were selected. In that 10 areas are coastal areas and 10 areas are non coastal areas. Since the sampling was done during the day time, It was a household based study and questionnaires were administered to those in the household and the necessary information were collected to meet the objectives of the study.

- The medico social history and other required details were filled up in the Proforma. The following techniques were used as per the recommendations of INDIAN HYPERTENSION GUIDELINES-III (IHG-III).

Procedure for Recording B.P.

- The individual is seated in a chair with his back supported and his arms bared and supported at heart level and was refrained from the use of tobacco in any form or ingestion of caffeine during the 30 minutes preceding the measurement.
- Palpate the brachial artery and position cuff 2.5 cm above brachial pulsation, wrap the cuff evenly around the upper arm and record both systolic and diastolic blood pressure.
- This procedure repeated for three days to the participants (Samples). In this the mean blood pressure reading is taken and classified according to INDIAN HYPERTENSION GUIDELINES-III (IHG-III).
- However the newly diagnosed hypertensive individuals were referred to the primary health center for further investigations and management. The known hypertensive cases were emphasized to continue their regular treatment.

Plan for Data Analysis

The data was analyzed by using Descriptive statistics and inferential statistics i.e. Mean, standard deviation, frequency, percentage, and Chi square test.

Table 1. plan for data analysis

Data analysis	Methodology	Remarks
Descriptive statistics	Frequency, Percentage, Mean and standard deviation	❖ To find out the frequency and percentage used for analyzing the demographic variables.
Inferential statistics	Chi-square Value	❖ To find out the association between the selected demographic variables & the blood pressure and ❖ association between the Blood pressure and BMI.

Coastal Areas: The findings in the coastal areas described in the following headings.

Frequency and percentage distribution of Blood Pressure in the coastal areas

Table 2. Frequency and percentage distribution of Blood Pressure in the coastal areas

N=2500

B.P CATEGORY	FREQUENCY	PERCENTAGE
OPTIMAL	656	26.24%
NORMAL	648	25.92%
HIGH-NORMAL	139	5.56%
STAGE-1	460	18.4%
STAGE-2	112	4.48%
STEGE-3	15	0.6%
GRADE-1	413	16.52%
GRADE-2	57	2.28%

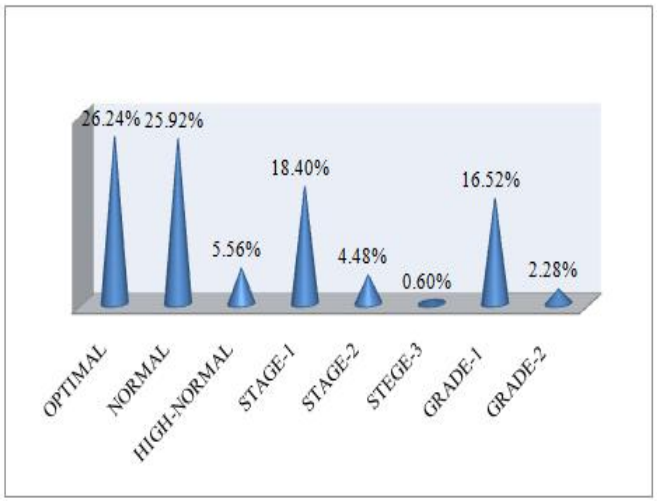


Fig. 1. Prevalence of Hypertension in Coastal Areas

Among 2500 samples, with regard to blood pressure, 460 (18.4%) samples were found to have stage-1 hypertension, 139 (5.56%) samples had high normal blood pressure, 648 (25.92%) samples were found to be normal, 656 (26.24%) had optimal blood pressure, 112 (4.48%) samples had stage –II hypertension, least samples 15(0.6%) belongs to stage-3 hypertension, 413(16.52%) had grade-1 systolic hypertension, and 57(2.28%) samples had grade-2 systolic hypertension.
*out of 2500 samples 510(20.40%) samples were newly diagnosed as hypertensive cases.

Frequency and percentage distribution of BMI in coastal areas

Table 3. Frequency and percentage distribution of BMI in the coastal areas

N=2500

CRITERIA	FREQUENCY	PERCENTAGE
Under weight (BMI = <18)	79	3.16%
Normal (BMI = 18.0-22.9 Kg/ m^2)	2038	81.52%
Over weight (BMI = 23.0-24.9 Kg/ m^2)	280	11.2%
Obese (BMI = 25 & above Kg/ m^2)	103	4.12%

Fig. 2. Percentage Distribution of BMI in the Coastal Areas

Among 2500 samples with regard to BMI Underweight 79 (3.16%), Normal 2038(81.52%), Overweight 280(11.2%), Obese 103(4.12%).

Association of Demographic variables with BP in the coastal areas: Among 2500 samples with regard to blood pressure age, education, family, occupation, income working

members in the family, Type of ventilation, sleeping hours, sleeping pattern, exercises, Type of oil used, Amount of oil used per day per person, Type of salt, Entertainment, Intake of fish, stress, Known hypertension are significant, and remaining were non significant.

Association of BMI GROUP WITH BP in coastal areas: With regard to Association of BMI group with BP, BMI group is having significant association with BP.

Non coastal areas: The findings in the non coastal areas described in the following headings.

Table 4. Frequency and percentage distribution of blood pressure in the non coastal areas

N=2500

B.P CATEGORY	FREQUENCY	PERCENTAGE
Optimal	67	2.7%
Normal	161	6.4%
High Normal	637	25.5%
Stage-I	1413	56.5%
Stage-II	194	7.8%
Stage-III	18	0.7%
Grade-I	6	0.2%
Grade-II	4	O.2%

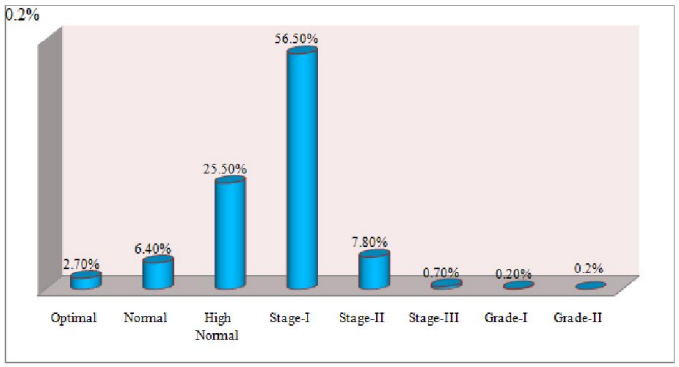


Fig. 3. Percentage distribution of blood pressure in the non coastal areas

Among 2500 samples, with regard to blood pressure most of the samples 1419 (56.7%) were found to have stage-1 hypertension, 637(25.5%) samples had high normal, 198 (8.0%) samples had stage –II hypertension, 161 (6.4%) samples were found to be normal,67 (2.7%) had optimal,18 (0.7%) samples under the criteria of stage –III hypertension, 6(0.2%) having grade-1 systolic hypertension, and 4(0.2%) samples having grade-2 systolic hypertension. *1313(52.52%) samples were newly diagnosed as hypertensive cases.

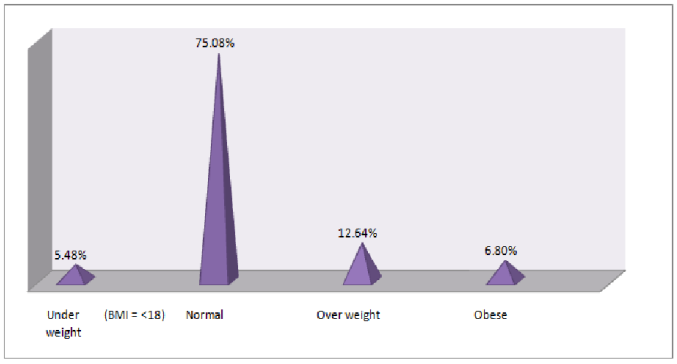
Frequency and percentage distribution of BMI in the non coastal areas

Table 5. Frequency and percentage distribution of BMI in the non coastal areas

N=2500

CRITERIA	FREQUENCY	PERCENTAGE
Under weight (BMI = <18)	137	5.48%
Normal (BMI = 18.0-22.9 Kg/ m^2)	1877	75.08%
Over weight (BMI = 23.0-24.9 Kg/ m^2)	316	12.64%
Obese (BMI = 25 & above Kg/ m^2)	170	6.8%

Fig. 4. Percentage distribution of BMI in the non coastal areas



Among 2500 samples with regard to BMI 1877 (74.08 %) samples were having normal BMI, 316 (12.64 %) samples were overweight, 170 (6.8%) samples were obese, and 137 (5.48%) samples were under weight.

Association of Demographic variables with BP in the Non coastal area

Among 2500 samples with regard to BP: age, gender, education, occupation , working members in the family, food pattern, entertainment, Intake of fish, stress, Known hypertensive were significant remaining were non-significant.

Association of BMI group with BP in the non coastal areas

Among 2500 samples BMI group is having significant association with BP.

Comparison of BP in coastal and non coastal areas

Table 6. Comparison of BP in coastal and non coastal areas

N=2500

Blood Pressure Category	COASTAL		NON COASTAL		Correlation coefficient	Standard deviation
	Frequency	Percentage	Frequency	Percentage		
Optimal	656	26.24%	67	2.7%		
Normal	648	25.92%	161	6.4%		
High Normal	139	5.56%	637	25.5%		
Stage-I	460	18.4%	1413	56.5%	0.143**	380.8769
Stage-II	112	4.48%	194	7.8%		
Stage-III	15	0.6%	18	0.7%		
Grade-I	413	16.52%	6	0.2%		
Grade-II	57	2.28%	4	O.2%		

**: highly significant.

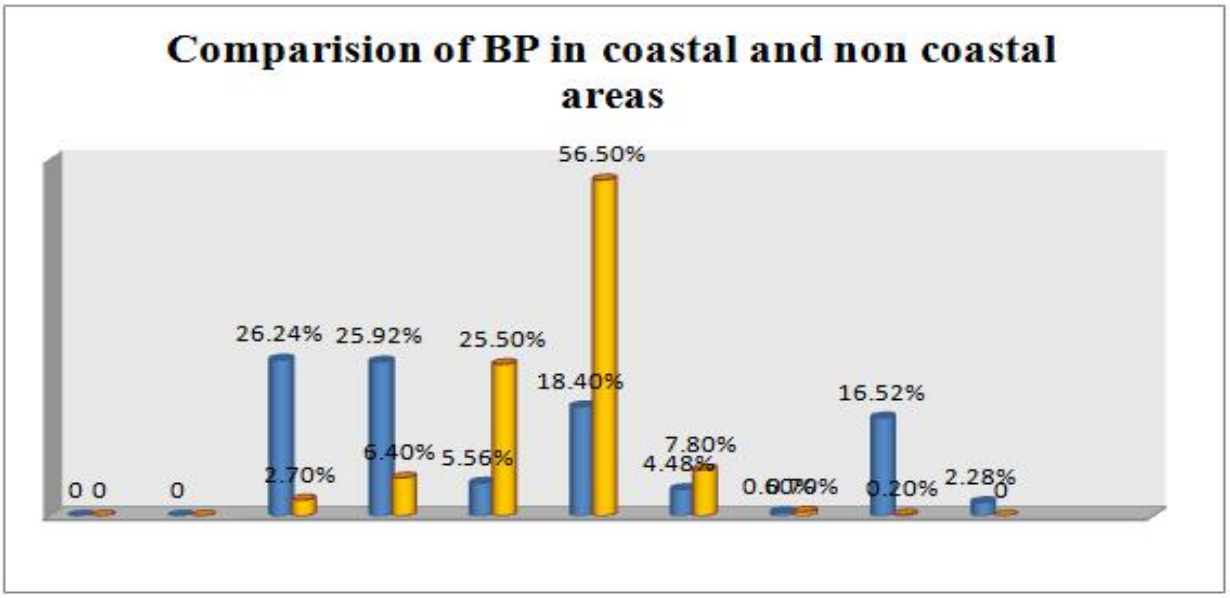


Fig. 5. Comparison of BP in coastal and non coastal areas

The prevalence of stage-I BP in coastal areas is 460(18.4%) but in non coastal areas it is 1413(56.50%). The correlation coefficient value is highly significant (0.143) and the standard deviation is 380.8769.

Comparison of BMI with HTN in coastal and non coastal areas

Table 7. Comparison of BMI with HTN in coastal and non coastal areas

N=2500

BMI CATEGORY	COASTAL				NON COASTAL				Correlation coefficient	Standard deviation
	STAGE-I		GRADE-I		STAGE-I		GRADE-I			
	F	%	F	%	F	%	F	%		
Under weight (BMI = <18)	14	0.56%	28	1.12%	24	0.96%	25	1%	0.99**	199.29
Normal (BMI = 18.0-22.9 Kg/ m^2)	364	14.56%	329	13.16%	554	22.16%	315	12.6%		
Over weight (BMI = 23.0-24.9 Kg/ m^2)	51	2.04%	40	1.6%	98	3.92%	39	1.56%		
Obese (BMI = 25 & above Kg/ m^2)	31	1.24%	16	0.64%	61	2.44%	20	0.8%		

**: highly significant.

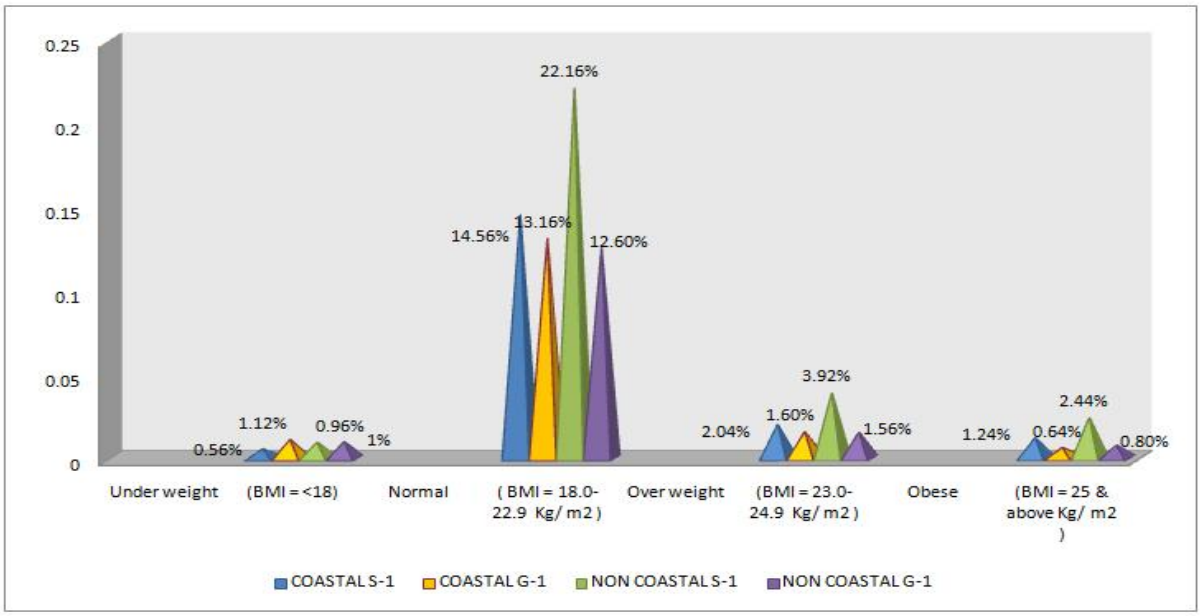


Fig. 6. Comparison of BMI with HTN in coastal and non coastal areas

The prevalence of overweight among stage-I HTN cases in coastal areas is 51(2.04%), obesity is 31(1.24%) but in non coastal areas it is 98(3.92%) and 61(2.44%). The correlation coefficient value is highly significant (0.99) and the standard deviation is 199.29.

Conclusion

- The above results shown that BP values are high in the non coastal areas than in the coastal areas.
- Among hypertension cases the prevalence of overweight and obesity are more in non coastal areas than coastal areas.
- The variables like age, education, type of family, occupation, income, working members in the family, Type of ventilation, sleeping hours, sleeping pattern, exercises, Type of oil used, Amount of oil used per day, Type of salt , Entertainment, stress, obesity are the influencing risk factors for the development of hypertension among the adults.

REFERENCES

Alikhani S, Delavari A, Alaedini F, Kelishadi R, Rohbani S, Safaei A. A province-based surveillance system for the risk factors of non-communicable diseases: A prototype for integration of risk factor surveillance into primary healthcare systems of developing countries. *Public Health*. 2009; 123(5): 358–364.

Anchala R, Kannuri NK, Pant H, *et al*. Hypertension in India: a systematic review and meta-analysis of prevalence, awareness, and control of hypertension. *J Hypertens*. 2014; 32(6):1170-7.

Bulliyya G, Reddy PC, Reddanna P. Arterial pressures in fish-consuming and non-fish-consuming populations of coastal south India. *Asia Pacific J Clin Nutr*. 1999; 8:195–199.

Deepa R, Shanthirani CS, Pradeepa R, Mohan V. Is the 'rule of halves' in hypertension still valid?--Evidence from the Chennai Urban Population Study, *J. Assoc. Physicians India* 2003; 51:153-7.

Dewailly E, Blanchet C, Gingras S, Lemieux S, Holub BJ. Cardiovascular disease risk factors and n-3 fatty acid status in the adult population of James Bay Cree. *Am J Clin Nutr*. 2002; 76: 85–92.

Gupta R. Trends in hypertension epidemiology in India. *J Hum Hypertens*. 2004; 18(2):73-8.

Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK and He J, Global burden of hypertension: analysis of worldwide data, Lancet 2005; 365:217-23.

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