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Prevalence of Hypertension among Adults of Moradabad City

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ABSTRACT The present study entitled "Prevalence of hypertension among adults of Moradabad City" was carried out with the following objectives- to find out the prevalence of hypertension among selected males and females adults of Moradabad and to find out the nutritional status and life style pattern of the selected respondents of Moradabad. A total of 150 respondents (75 males and 75 females) were selected randomly from whole of the Moradabad City. The anthropometric measurements of the respondents that is height in cm and weight in kg were taken. Dietary intake was determined by 24 hours dietary recall method and the average nutrient intake was calculated and compared with recommended dietary allowances (RDA). In the study it was concluded that out of 150 respondents, 76.66 percent were hypertensive. Nutrient intake was found more in terms of energy, protein, fat, carbohydrates and calcium than the RDA and lesser in terms of iron, retinol and niacin for both males and females. Walking was the major exercise performed by them and 66 percent of respondents did not consume any harmful substances.

INTRODUCTION

Hypertension is a major problem because over a period of time, raised blood pressure can cause gradual damage to many organs in the body.Damage which can be serious and irreversible - if left untreated, high blood pressure can cause many different types of cardiovascular disease, blood clot or aneurysm (a swollen, or burst, blood vessel) and can also result in damage to the eyes, to kidney disease and kidney failure. Hypertension is one of the main causes of stroke, heart disease, and kidney failure and it is essential that high blood pressure is detected and kept in check and the earlier the age at which it is detected and treated, the less the likelihood of damage. Older people especially, should have their blood pressure measured regularly and treated if it is too high - it is estimated that about 90 percent of middle–aged adults will develop high blood pressure in the remainder of their lifetime**.** The ingestion of excess dietary salt is strongly correlated with cardiovascular disease, morbidity, mortality, and is regarded as a major contributing factor to the pathogenesis of hypertension (Stocker et al. 2010). Detection of hypertension and blood pressure control are critically important for reducing the risk of heart attacks and strokes. Reducing systolic and diastolic Blood Pressure can decrease cardiovascular risk. Comprehensive hypertension management focuses on reducing overall cardiovascular risk by lifestyle measures. Thus, the prime aim should be of lowering down Blood Pressure for maintaining a healthy life.

MATERIALS AND METHODS

Location of Study

Moradabad City was purposively selected for the investigation as investigator was well acquainted with the area and people residing there.

Sample Selection

The total population of Moradabad City was 889,810 people in whom there were 466,432 males and 423,378 females were there. From whole of the Moradabad city 75 males and 75 females were selected randomly thus the sample constituted 150. The age group taken for the study was 21-60 years of age.

Method of Enquiry and Data Collection

The schedules included the aspects which led to the fulfillment of the objectives of the study. The interview schedule consisted of the following information:

- General profile
- Dietary intake (24 hrs. dietary recall method) (Swaminathan 2003).
- Anthropometric assessment (Srilakshmi 2007).
- Life style patterns

Measurement of Blood Pressure (B.P)

Blood pressure was measured using a sphygmomanometer. Most of the people call it a blood pressure gauge (or cuff) (Stibich 2007).

Statistical Analysis

The data obtained was tabulated, processed and statistically analyzed by using-paired t-test (Gupta and Kapoor 2002).

RESULTS AND DISCUSSION

General Information

The age group taken for the study was from 21 to 60 years of age. Out of total respondents, 45.33 percent males and 46.66 females belonged to joint family where as 54.66 percent males and 53.33 percent females belonged to nuclear family. Out of total, 1.33 percent of males were illiterate, 12 percent educated up to high school, 10.66 percent educated up to intermediate, 38.66 per cent were graduates, 33.33 percent were post graduates and 4 percent were having any other education. In case of females, 1.33 percent were illiterate, 1.33 percent educated up to high school, 14.66 percent educated up to intermediate, 30.66 percent were graduates and 52 percent were post graduates. The data shows that 45.33 percent males and 14.66 percent females were service class, 37.33 percent males and 2.66 percent females belonged to business class, 1.33 percent males had agriculture as their occupation, 76 percent females were housewives and 16 percent males and 6.66 percent female were servants and maids in other's families respectively. Maximum adults, that is, 64 percent male and 65.33 percent females had an average monthly income of more than Rs. 20,000 followed by 20 percent males and 17.33 females who had an average monthly income between Rs. 15,000 – 20,000 followed by 6.66 percent males and 10.66 percent females who had monthly income between Rs. 10,000-15,000 and 9.33 percent males and 6.66 percent females who had monthly income between Rs. 5,000- 10,000 per month.

Food Habits and Dietary Pattern

Out of 150 respondents, 49.33 percent males and 70.66 percent females were vegetarians, 44 percent males and 16 percent female were non-vegetarians and 6.66 percent male and 13.33 percent females were ovo lacto vegetarians. Out of 150 respondents, equal number (64 percent) of males and females respectively consumed whole milk, 14.66 percent males and females consumed toned milk and 21.33 percent males and females respectively were taking cow's milk. Data in Table 1shows that 13.33 percent respondents were using mustard oil for cooking, 65 percent were using refined oil, 4.66 percent were using *dalda* and *desi ghee* and 29.33 percent were using mustard along with refined oil. The data indicates that 16 percent males and 21.33 females consumed fast foods once in a week, 16 percent males and 17.33 females consumed it twice a week, 32 percent males and 45.33 females consumed it once in a month and 36 percent males and 16 percent females did not consume any fast food from the market. Outof 150 respondents, 17.33 males and 9.33 percent females followed type (a) dietary pattern, 18.66 males and 16 percent females followed (b) dietary pattern, 40 percent males and 53.33 females followed (c) dietary pattern and 24 percent males and 21.33 females followed (d) dietary pattern. Forty-four (44) percent males and 60 percent females preferred spicy food where as 56 percent males and 40 percent females did not prefer it.

Nutrient Intake

Table 2 shows the average nutrient intake of all the nutrients by the respondents with reference to energy, protein, fat, carbohydrate, calcium, iron, retinol and niacin. On applying t-test, significant differences were found out between intake and RDA for calories, protein, fat, carbohydrates, calcium, iron, retinol and niacin. The calculated t-values for the nutrients intake by respondents were non- significant except for protein, carbohydrates and energy than the table value of t (12.076).

Life Style Pattern of Selected Respondents

Table 3 shows the sample average exercise performed by the respondents. Walking was the major exercise of respondents. From the data in Table 3 it is clear that 34.66 percent male and 38.66 percent females preferred walking, 18.66

Table 1: Frequency distribution of adults of Moradabad City according to their food habits and dietary pattern:

S.No.	Particulars	Male (n=75)		Female (n=75)		Total (%) (N=150)
		n	%	N	%	
1.	*Food Habits*					
	Vegetarian	37	49.33	53	70.66	60
	Non vegetarian	33	44	12	16	30
	Ova-lacto vegetarians	5	6.66	10	13.33	10
2.	*Type of Milk Consumed*					
	Whole milk	48	64	48	64	64
	Toned milk	11	14.66	11	14.66	14.66
	Cow's milk	16	21.33	16	21.33	26.66
3.	*Oils Used for Cooking*					
	Mustard oil	12	16	8	10.66	13.33
	Refined oil	37	49.33	42	56	65
	Any other(ghee or dalda)	5	6.66	2	2.66	4.66
	Mustard + Refined oil	21	28	23	30.66	29.33
4.	*Fast Food Consumption*					
	Once a week	12	16	16	21.33	24
	Twice a week	12	16	13	17.33	16.66
	Once in a month	24	32	34	45.33	38.66
	Don't take	27	36	12	16	26
5.	*Dietary Pattern*					
	(a) Brunch + Dinner	13	17.33	7	9.33	13.33
	(b) Breakfast + Lunch + Dinner	14	18.66	12	16	17.33
	(c) Breakfast + Lunch + Evening tea+ Dinner	30	40	40	53.33	46.66
	(d) Breakfast + Lunch + Evening tea + Dinner + Bed time	18	24	16	21.33	22.66
	(e) Any other	-	-	-	-	-
6.	*Preference of Spicy Foods*					
	Yes	33	44	45	60	52
	No	42	56	30	40	62

Table 2: Average nutrient intake per day by adults of Moradabad city

Parameters	Energy (kcal)	Protein (g)	Fat (g)	CHO (g/d)	Calcium (mg/d)	Iron (mg/d)	Retinol (µg/d)	Niacin (mg/d)
Intake(Male)	2528.03	67.93	44.03	465	697.51	17.56	101.75	10.70
RDA	2425	60	20	501.25	400	28	600	16
Difference	103.03	7.93	24.03	36.25	297.51	-10.44	-498.25	-5.3
t-value(cal)	48.04	16.132	2.665	26.57	3.689	4.364	1.408	5.038
t-table	12.70	12.70	12.70	12.70	12.70	12.70	12.70	12.70
Result	S	S	NS	S	NS	NS	NS	NS
Intake(Women)	2074.89	55.65	46.20	359.12	603.12	18.65	212.67	9.65
RDA	1875	50	20	373.75	400	30	600	12
Difference	199.89	5.65	26.2	-14.63	203.12	-11.35	-387.33	-2.35
t-value(cal)	19.844	18.696	2.527	50.094	4.939	4.286	2.098	9.213
t-table	12.706	12.706	12.706	12.706	12.706	12.706	12.706	12.706
Result	S	S	NS	S	NS	NS	NS	NS

S= Significant; NS=Non-significant

percent males and 16 percent females preferred light exercise, 4 percent males and 2.66 percent females did jogging, 2 percent males and none of the females preferred any other exercise, 8 percent males and 9.33 percent females perform more than one exercise and rest of the respondents that is 30.66 percent males and 33.33 percent females preferred not performed any kind of physical exercise. Maximum respondents slept for 8 hours (52 percent males and 57.33 percent females), 42.66 percent males and 38.66 percent females slept for 6 hours and 1.33 percent males and none of the women slept for 5 hours and rest of the respondents,that is, 4 percent males

Table 3: Life style pattern of adults of Moradabad city

S.No.	Particulars	Male (n=75)		Female (n=75)		Total (%) (N =150)
		n	%	N	%	
1.	*Exercise*					
	Walking	26	34.66	29	38.66	36.66
	Light Exercise	14	18.66	12	16	17.33
	Jogging	4	5.33	2	2.66	4
	Any other	2	2.66	-	-	1.33
	None	23	30.66	25	33.33	32
	More than one	6	8	7	9.33	8.66
2.	*Sleeping Time*					
	5 hours	1	1.33	-	-	0.66
	6 hours	32	42.66	29	38.66	40.66
	8 hours	39	52	43	57.33	54.66
	Any other	3	4	3	4	4
3.	*Mode of Transportation*					
	Own vehicle	55	73.33	46	61.33	67.33
	Public transport	18	24	23	30.66	27.33
	Walking	2	2.66	5	6.6	4.66
	More than one	-	-	1	1.33	0.66
4.	*Harmful Substances Intake*					
	Alcohol	3	4	2	2.66	3.33
	Cigarette	4	5.33	-	-	2.66
	Betel leaves and nuts	9	12	9	12	12
	Pan Parag	2	2.66	2	2.66	2.66
	Tobacco	3	4	-	-	2
	More than one	14	18.66	3	4	11.33
	None	40	53.33	59	78.66	66
5.	*Family History of Hypertension*					
	Yes	36	48	28	37.33	42.66
	No	39	52	47	62.66	57.33
6.	*Medicine Intake to Control Blood Pressure*					
	Allopathic	14	18.66	16	21.33	20
	Homeopathic	2	2.66	4	5.33	4
	Ayurvedic	5	6.66	2	2.66	4.66
	None	54	72	53	70.66	71.33

and 4 percent females slept for more than 8 hours. Most of the respondents use their own vehicle, that is, 73.33 percent males and 61.33 percent females use their own vehicle, 24 percent males and 30.66 percent females use public transport, 2.66 percent males and 6.6 percent females prefer walking for their communication and 1.33 females go through more than one means of transportation. From the data it is clear that 4 percent males and 2.66 percent females take alcohol, 5.33 percent males and none of the females take cigarette, 12 percent male and 12 percent female take betel leaves and nuts, 2.66 percent males and 2.66 females consume *pan parag,* 4 percent males and none of the females consume tobacco, 18.66 percent male and 4 percent females consume more than one harmful substance and rest of the respondents,that is,53.33 males and 78.66 females do not consume these harmful substances. The data shows that 48 percent males and 37.33 percent females were having family history of hypertension where as 52 percent males and 62.66 percent females were not having any family history of hypertension. The data also shows that 18.66 percent males and 21.33 percent females were taking allopathic medicine, 2.666 percent males and 5.33 percent females were taking homeopathic medicine, 6.66 percent males and 2.66 percent females were taking ayurvedic medicine whereas 72 percent males and 70.66 percent females were not taking any medicine to control blood pressure.

Body Mass Index of the Respondents

Table 4 shows that out of the 150 respondents, 5.33 percent females and 4 percent males

Table 4: Distribution of the respondents according to their BMI

S.No.	Particulars		Male (n=75)		Female (n=75)		Total (%) N =150
			n	%	N	%	
1.	BMI(kg/m²)						
	<16.0-18.5	Underweight	3	4	4	5.33	4.66
	18.5-20.0	Low weight-normal	5	6.66	5	6.66	6.66
	20.0-25.0	Normal	22	29.33	33	44	44
	25.0-30.0	Obese grade 1	30	40	28	37.33	38.66
	>30	Obese grade 2	15	20	5	6.66	13.33

were underweight, 6.66 percent females and males were having low weight-normal, 44 percent females and 29.33 percent males were having normal BMI, 37.33 percent females and 40 percent males have grade 1 obesity having BMI and 6.66 percent females and 20 percent males were having grade 2 obesity having BMI more than 30.

Prevalence of Hypertension

Table 5 shows that out of 150 respondents, total 23.33 percent respondents were non hypertensive, out of which 17.33 percent were males and 29.33 percent were females. In the same way, 40 percent were suffering from mild hypertension, out of which 42.66 were males and 37.33 were females. From the data it is also clear that 26.66 percent respondents were suffering from moderate hypertension, out of which 28 percent were males and 25.33 percent were females where as 10 percent respondents were suffering from severe hypertension, in which 12 percent males and 8 percent females were there.

Other Complications Related to Health

The data in shows that 6.66 percent females and 16 percent males had diabetes, 4 percent females and 13.33 percent males had cardiac disease, 1.33 percent females and 5.33 percent males were suffering from arthritis, 1.33 percent females and 5.33 percent males were having kidney disease, 20 percent females and 6.66 percent males were having any other health related problem, 14.66 percent females and 1.33 were suffering from more than one health related problem where as 52 percent females and 52 percent males were not having any health related problem.

Table 5: Prevalence of hypertension among males and females of Moradabad city

Result	N=75 (Males)	%	N=75 (Females)	%
Non hypertensive	13	17.33	22	29.33
Mild	32	42.66	28	37.33
Moderate	21	28	19	25.33
Severe	9	12	6	8

Table 6: Other health related complications as reported by the respondents

Other complications related to health	N=75		N=75		Total (%)
	No. of females	%	No. of males	%	
Diabetes	5	6.66	12	16	11.33
Cardiac disease	3	4	10	13.33	8.66
Arthritis	1	1.33	4	5.33	3.33
Kidney disease	1	1.33	4	5.33	3.33
Any other(stomach disturbance, body pain)	15	20	5	6.66	13.33
More than one	11	14.66	1	1.33	8
None	39	52	39	52	52

CONCLUSION

From the results, it is concluded that out of 150 respondents of Moradabad City, total 76.66 percent respondents were found hypertensive. On the basis of BMI maximum respondents were suffering from grade I obesity that is, total 38.66 percent in which 40 percent were males and 37.33 percent females. Nutrient intake was found to be significant of both males and females in terms of energy, protein and carbohydrates than the recommended RDA and non- significant in terms of iron, retinol, calcium and niacin of both males and females respectively. Out of 150 respondents, walking was the major exercise performed by them, maximum number of respondents had 8 hours of sleeping, maximum respondents used their own vehicle for transportation and 66 percent of respondents did not consume any harmful substances like alcohol, cigarette, betel leaves and nuts, *pan parag* and tobacco whereas 11.33 respondents intake more than one harmful substances among these.

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