RESEARCH ARTICLE

Influence of dietary practices on Blood pressure: comparison between house wives and employed women

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Abstract

Objective: To compare the occurrence and to determine relationship of dietary practices with hypertension between housewives and working women.

Methods: The cross-sectional study was conducted at Karachi University and Dow University of Health Sciences, Karachi, from January to April 2015, and comprised working women and housewives who were enrolled using convenient sampling. Data was collected on consumption of fruits, vegetables, poultry/fish and fast food. Blood pressure and body mass index were noted and interpreted according to World Health Organisation classification for Asian population. Normal reference range of blood pressure was taken as Systolic100-120mmHg, Diastolic 60-90 mmHg, and mean value as 120/80mmHg. Data analysis was done using SPSS17.

Results: There were 600 subjects; with 300(50%) housewives and as many working women. Mean age of housewives was 35.56±7.53 years, and that of employed women 35.44±6.65 years. Among the housewives, 96(32%) had normal blood pressure while the corresponding number in the other group was 198(66%) ($p<0.001$). In terms of relationship body mass index with hypertension, out of the 204(68%) hypertensive housewives, 90(44.1%) were overweight, and of the 102 hypertensive working women, 40(39.23%) had normal weight range. Most housewives reported a sedentary lifestyle as opposed to working women ($p<0.001$).

Conclusion: Being a housewife was in itself found to be a contributing factor in hypertensive disorders.

Keywords: Dietary habits, Working women, Housewives, Blood pressure. (JPMA 69: 857; 2019)

Introduction

In the developing countries the risk of high blood pressure (BP) and ischaemic heart problems is gradually increasing in addition to malnourishment and infectious diseases and the already limited funds and resources of the developing countries and their health systems are unnecessarily being utilised to combat this problem.[1] A study done in Punjab shows crude prevalence of hypertension (HTN) as 35.1% and age-standardised prevalence as 34.4%.[2]

Another study outcome pointed towards increased prevalence as well as less control of high BP in the population. The total occurrence of HTN was 26% and was 24% in women.[3]

In order to manage the threat of HTN disorders, preventive methodology like dietary changes and lifestyle modifications should be adopted because of low availability of medical care of the disease and its complications. A healthy diet can lower BP and prevent HTN because it has plenty of vitamins fibre, and other nutrients which help to prevent certain diseases. For example, it can reduce weight and cholesterol and help control systolic blood pressure (SBP) up to 11mmHg. Lifestyle intervention trials have uniformly achieved short-term weight loss, primarily through a reduction in total caloric intake. The current challenge to healthcare providers, researchers, government officials and the general public is developing effective strategies that lead to sustained dietary changes among populations groups.[4]

Elevated BP results from environmental factors, genetic factors and interactions among these factors. Out of the environmental factors, diet has a prominent and likely predominant role in homeostasis. In non-hypertensive individuals, including those with prehypertension, dietary changes have the potential to prevent HTM and thereby lower the risk of complications.[5]

Women comprise nearly half of the community, and their health directly have impact on the whole family. Mothers with healthy behaviours pass them on to their children.[6]

Towards midlife, women are exposed to multiple cardiovascular disease (CVD) risk factors, including HTN. Several studies have demonstrated the link between occupation and health in women. CVD risk factors, particularly HTN and obesity also occur with different frequencies in employed women and housewives, with

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homemakers showing an increased risk of HTN in contrast to employed women.[7,8]

The current study was planned to assess HTN prevalence among housewives and working women, and to determine the relationship of dietary practices with HTN.

Subjects and Methods

The cross-sectional study was conducted at Karachi University (KU) and Dow University of Health Sciences (DUHS), Karachi, from January to April 2015, and comprised working women and housewives who were enrolled using convenient sampling. The subjects were from middle socioeconomic background and were aged 35-45 years. The sample size was calculated using online software Open Epi version 3.[9] Considering 95% confidence level with 80% of power, the total calculated sample size was 578 with 289 for each group. We added 4% to cover up for non-respondents.[10]

The employed women were working at DUHS and KU, while the housewives were mostly residents of the KU Staff Town. The housewives selected were those who had a minimum of 14 years of education to minimise the confounding effect of knowledge levels between the study groups. Women who had HTN history during pregnancy or were suffering from diabetes, heart diseases, arthritis, tuberculosis and other organic and infectious diseases were excluded.

The questionnaire (Annexure) addressed items about demographic profile, household income, time spent for household support, number of children etc. Participants also answered questions about dietary practices. Data was collected using food frequency questionnaire for dietary habits on dairy, fruit, vegetable, poultry/fish water consumption. Body weight, heights were taken and body mass index (BMI) was calculated and interpreted using standard methods.[11] BP was recorded by sphygmomanometer. BP of the participants was measured twice with the gap of half-an-hour to minimise chances of error. Normal reference range of BP was taken as Systolic 100-120mmHg, Diastolic 60-90mmHg, and mean value as 120/80mmHg.[12] Verbal consent was taken from every participant. Data was collected by volunteers who already had practice of measuring BP. Data was analyzed using SPSS 17. The results were considered statistically at $p<0.005$.

Data and analysis related to BMI, assessment of depression level and awareness of calcium and vitamin D deficiency mentioned in the questionnaire have already been published.[13-15]

Results

There were 600 subjects; with 300(50%) housewives in group 1 and as many working women in group 2. Mean age in group 1 was 35.56±7.53 years, and that of group 2 was 35.44±6.65 years (p=0.827). The mean period of marriage was higher in housewives 13.01±9.32 years than working women 11.00±7.14 years (p=0.003). Mean number of children was 3.16±1.97 in group 1 and 2.63±1.59 in group 2 (p<0.001).

In group 1, normal BP was found in 96(32%) subjects, while 198(66%) has normal BP in group 2. The hypertensive category showed 204(68) housewives compared to 102(34%) working women (Table-1).

Table-1: Assessment of blood pressure among working women and housewives.

	Housewives		Working Women		Test Statistic	P-value
	Frequency	Percentage	Frequency	Percentage		
Blood Pressure					69.38	<0.001
Normotensive	96	32.0%	198	66.0%		
Hypertensive	204	68.0%	102	34.0%		

Table-2: Relationship of high blood pressure with BMI in housewives and working women.

	Housewives				Chi Square test Statistic	P-value	Working women				Chi Square test Statistic	P-value
	Normotensive		Hypertensive				Normotensive		Hypertensive			
	n	%	n	%			n	%	n	%		
Underweight = <18.5	0	.0%	14	6.9%	59.27	<0.001	6	3.0%	46	45.1%	97.70	<0.001
Normal weight = 18.5-22.9	0	.0%	52	25.5%			90	45.5%	40	39.2%		
Overweight = 23-24.9	36	37.5%	90	44.1%			55	27.8%	16	15.7%		
Obesity = BMI of 25 or greater	60	62.5%	48	23.5%			47	23.7%	0	.0%		

While observing relationship of BMI with HTN, out of 204(68%) hypertensive housewives, 90(44.1%) were overweight. Of the 102(34%) hypertensive working women, 40(39.23%) had normal weight range (Table-2).

Relatively healthy dietary practices were witnessed among working women, but more women with normal BP in both groups were found to be consuming diet containing fruits, green vegetables, whole grains, pulses, poultry and fish (Table-3).

By observing the specific details, like number of meals consumed per day, more housewives were noted as hypertensive in all categories in contrast to working women. Although the result was not significant, more housewives in our study responded that their lifestyle was sedentary compared to that of the working women. A study in Iran also showed that 17% housewives and 9% working women had 4-6 CVD risk factors.[18] A cross-sectional study of middle-aged Japanese population inspected the relationship of food intake habits and

Table-3: Relationship of high blood pressure with dietary and life style practices.

Groups	Housewives				Chi Square test	P-value	Working women				Chi Square test	P-value
Blood 1ressure	Normotensive		Hypertensive		Statistic		Normotensive		Hypertensive		Statistic	
Frequency	n	%	n	%			n	%	n	%		
Meals consumed per day												
3 meals	30	24.2%	94	75.8%	9.46	0.009	128	59.3%	88	40.7%	15.75	<0.001
2 or less	22	29.7%	52	70.3%			54	84.4%	10	15.6%		
No regular pattern	44	43.1%	58	56.9%			16	80.0%	4	20.0%		
Servings of vegetables consumed per day												
3-5	28	35.9%	50	64.1%	0.893	0.64	48	61.5%	30	38.5%	4.104	0.128
< 3	32	32.0%	68	68.0%			64	61.5%	40	38.5%		
Sometime	36	29.5%	86	70.5%			86	72.9%	32	27.1%		
Servings of fruits consumed per day												
2-4	26	50.0%	26	50.0%	10.19	0.006	74	63.8%	42	36.2%	3.34	0.188
< 2	20	24.4%	62	75.6%			66	62.3%	40	37.7%		
Sometime	50	30.1%	116	69.9%			58	74.4%	20	25.6%		
Fish/poultry consumed per day												
> 6oz	40	40.8%	58	59.2%	11.5	0.003	60	76.9%	18	23.1%	8.138	0.017
< 6oz	46	33.3%	92	66.7%			128	61.0%	82	39.0%		
Sometime	10	15.6%	54	84.4%			10	83.3%	2	16.7%		
Consumed glasses of water per day												
At least 8	26	26.0%	74	74.0%	2.49	0.288	124	63.3%	72	36.7%	2.69	0.261
4 to 8	36	35.3%	66	64.7%			56	73.7%	20	26.3%		
< 4	34	34.7%	64	65.3%			18	64.3%	10	35.7%		
Consume fast food per week												
> Once	10	35.7%	18	64.3%	0.359	0.836	12	85.7%	2	14.3%	8.304	0.016
Once a week	32	30.2%	74	69.8%			66	56.9%	50	43.1%		
Sometime	54	32.5%	112	67.5%			120	70.6%	50	29.4%		

NA = Pearson Chi-Square test was not applicable due to cells have expected count less than 5.

Discussion

This study found the occurrence of HTN among housewives to be 68% versus 34% in working females. Also, out of 204 hypertensive housewives, 90(44.1%) were overweight in contrast to 16(15.7%) from the working class. That could be due to the fact that working women have better dietary choices and practices including number of meals per day.

Even though most of the working women displayed normal BP, surprisingly, among the 102 hypertensive working women, 40 were those who showed normal weight. The reason could possibly be work-related stress as witnessed in other studies.[16,17]

dietary patterns to BP, and after adjustment for confounding factors, the results suggested that habitual intake of dairy products, fruits and meat or chicken may have been associated with the reduction of BP possibly through the intake of protein and potassium.[19] In the current study, 18 working women and 58 housewives were hypertensive among those who consumed more than 6 ounces of fish or poultry. Furthermore, a greater number of women in both groups — 92 housewives and 82 working women — had high BP who consumed less than 6 ounces of fish or poultry.

Research about fruit and vegetable consumption has documented that increased fruit and vegetable intake

lowers BP.[20,21] Almost similar outcomes were noted in our study which demonstrated that greater numbers of hypertensive housewives were seen in the category that was taking less than two servings as well as rare usage of fruits. As far as working women are concerned, no significant difference was noted except for the unexpected more normotensive women who were not used to eating fruits regularly. In the Dietary Approaches to Stop Hypertension (DASH) trial, the groups that increased fruit and vegetable consumption achieved the target of reducing BP.[22] Another study showed that the effect of interventions on housewives was more significant.[23] In the current study, overall more housewives were hypertensive in all categories of vegetable use. In addition to this, although, generally the number of working women was more in the normotensive group, there were more working women with high BP in the category consuming less than 3 servings of vegetables compared to women eating more vegetables, thereby validating the benefits of vegetable intake.

Surprisingly, when the consumption of fast food items was noted, majority of women in both groups responded that they had it sometimes (166 housewives and 170 working women). However, a big number was seen in normotensive category of working women (112) as well as many housewives (54) also showed normal BP. To sum up the consumption of fast food, it was obvious that overall more housewives were hypertensive irrespective of the frequency of fast food usage. In a study done to assess the consumption of fast food items, the number of working women was more in comparison to housewives. But this was noted for the period of the work timings only. The possible reason could be their specific lifestyle along with more hours spending outside home and hence less availability of household items of food.[24]

In terms of study's limitations, the ideal check for HTN would have been through multiple readings over a period of one month but due to time constraints, limited human resource and availability issues of the subjects, data was limited to only two readings.

Another limitation of the study was that mostly the participants responded that their parents were on hypertensive medicines but they were not sure at what age those medicines had been started, so the family history of HTN could have affected results.

Despite the limitations, the information obtained from the study can be utilised to prevent and control HTN as well as promotion of healthy dietary practices, especially in the women population of developing countries. Also, it highlights the need for community-based interventions, especially those targeting housewives.

Conclusion

Diet rich in fibre, minerals, vitamins and healthy proteins was found to be linked to normal BP. Also, among hypertensive women, there were more housewives in contrast to working women, suggesting that being a housewife in itself was also a contributing factor for high BP.

ANNEXURE: STUDY QUESTIONNAIRE

Form No._____

Date of interview: _____
Name of interviewer: _____
Contact No. of participant: _____
Address of participant: _____
1. Age: _____
2. No. of children: _____
3. Years of marriage: _____
4. House hold family income _____
5. House hold work _____ hours
6. Occupation:
   a) Working woman_____
      University teacher_____, Clinical doctor _____, Teaching doctor _____
   b) Housewife _____
7. Weight: _____ kg. ht: _____ cm
8. BMI: _____ (wt. in kg/ht in cm squared)
9. Blood Pressure mmHg 1st reading: Systolic _____, Diastolic _____, Date: _____, Time: _____
10. Blood Pressure mmHg 2nd reading: Systolic _____, Diastolic _____, Date: _____, Time: _____
11. Comment on your health in general:

Contd. on next page >>>

a. Good _____
b. Satisfactory _____
c. Poor _____

S #	QUESTION
OPTIONS	ANSWER

DIETARY ASSESSMENT

13. How many meals do you consume per day?

1. 3 meals

2. 2 meals or less

3. no regular eating pattern

14. Indicate type and amount of grain product Consumed per day.
Note: A serving is 1 slice bread, ½ roti, or other grain products.

1. whole grain 6-11servings(3-5.5 roti)

2. whole grain 6 or less servings(3 roti)

3. refined (white bread) 6-11 servings

4. refined grain 6 or less servings

5. rarely consume grain products

15. A serving is 1/3cup beans, 1/3 cup oatmeal or rice

1. At least 6-11 servings

2. 6 or less servings

3. Rarely consume grain products

16. Servings of vegetables consumed per day
Note: A serving is 1 cup of raw or ½ cup of cooked vegetable

1. 3-5 servings per day

2. Less than 3 servings per day

3. Rarely consume vegetables

17. Servings of fruits consumed per day
Note: a serving is one piece of fruit

1. 2-4 servings per day

2. Less than 2 servings per day

3. Hardly ever consume fruit

18. Servings of dairy products consumed per day
Note: A serving is 1 cup of milk or 1 oz. of cheese

1. At least 2 servings per day

2. Less than 2 servings

3. Hardly consume dairy products

19. Meat products consumed per day

1. Do not consume meat products

2. Less than 6oz of red meat

3. more than 6oz of red meat

20. Fish or poultry consumed per day

1. Do not consume fish or poultry

2. Less than 6oz of fish or poultry

3. More than 6oz of fish , poultry

21. Types and number of servings of fat and spreads consumed each day
Note: High fat example; butter and margarine Low fat example; mayonnaise.

1. Low fat sparingly(less than 3)

2. Low fat frequently(3 or more)

3. Both high and low fat sparingly

4. High fat sparingly(less than3)

5. High fat frequently(3 or more)

22. Consumed glasses of water per day
Note: Serving is one 8-oz glass of water only; do not include coffee, tea, soda or other beverages.

1. At least 8 glasses per day

2. About 4-8 glasses per day

3. Less than 4 glasses per day

4. Seldom consume water

23. How many times do you consume fast food or convenience food per week

1. Rarely

2. less than 1 time

3. More than 1 time

SELF ASSESSMENT

24. On a scale of 1-10 how would you assess quality of your diet?

1. 1-2 being very low quality

2. 3-7 moderate

3. 8-10 being high quality

Contd. on next page >>>

25. Would you like any advice or support to help you make any changes to the quality of your diet?

1. Yes

2. No

WORK /ACTIVITY LEVEL

26. Is your job type sedentary

1. Yes

2. No

EXERCISE FREQUENCY

27. How many days per week do you exercise

1. 3 or more days per week

2. Less than 3 days per week

3. No regular exercise program

28. What would you identify as the main barriers from preventing you from exercising

1. No time

2. Cost

3. Injury

4. Lack of Motivation ,facilities, fitness

MENTAL WORK LOAD

29. Mental activity

1. Teaching/delivering lecture

2. Examining patients

3. Discussion with students

4. Car driving

5. with children's homework etc.

Attitude and willingness to change behavior for a better and healthy lifestyle.

When you feel under stress or pressure do you

30. Try to work out a solution?

1. Yes

2. No

31. Ignore the problem?

.

1. Yes

2. No

32. Stay away from others and keeping your feelings to yourself?

1. Yes

2. No

33. Spend more sociable time going out with friends and family?

1. Yes

2. No

34. Work harder?

1. Yes

2. No

35. Talk to someone about the problem?

1. Yes

2. No

SOCIAL SUPPORT

36. Emotional and physical support from family

1. Yes

2. No

37. Emotional and physical support from friends

1. Yes

2. No

38. Emotional and physical support from colleagues

1. Yes

2. No

39. Leisure activity outdoor with family/friends

1. Daily

2. Weekly

3. Occasionally

40. Social/community work

1. Yes

2. No

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