# ASSOCIATION OF LIFESTYLE WITH HIGH BLOOD PRESSURE AMONG CLIENTS ATTENDING DIABETIC CLINICS 

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#### Abstract

Diabetes is a major health problem of both young and old aged people in society, regionally and globally. The descriptive study design was used to find out association of lifestyle with high blood pressure among clients attending diabetic clinics. Total 50 clients with type II diabetes ( 25 clients with only diabetes and 25 clients with diabetic hypertensive) were selected by using non probability purposive sampling technique. There was significant association between amount of salt intake (less than family members), amount of consumption of cooking oil in their daily diet, nature of daily works and state of blood pressure ( P value $0.047,0.015$, and 0.024 respectively). No significant association was found between respondents' other dietary pattern, drinking alcohol, smoking, physical exercise and state of blood pressure. Based on the findings of the study, certain lifestyle pattern effects on blood pressure and certain do not.


KEYWORD: Blood pressure status, lifestyle, type II diabetes.

## INTRODUCTION

Diabetes mellitus is one of the major public health problems. The number of diabetic patients worldwide was estimated to be 180 million in 2000 ; this number is likely to be more than double by 2030. The prevalence of diabetes in South East Asia was 4, 09, 03, 000 and 4, 36,000 in Nepal, and it is estimated to be 13, 28,000 by 2030 A.D. ${ }^{[1]}$

Diabetes mellitus leads to a various acute and chronic complications including hypo-glycaemia, hyperglycaemia, hypertension, cardiovascular damage, retinopathy, nephropathy and neuropathy.

Diabetes mellitus is a chronic condition, but people with diabetes can live a fully life while keeping their diabetes under control. Lifestyle modification can be a very effective way to keep diabetes in control. Improved blood glucose control can slow the progression of longterm complications. Lifestyle changes promoting weight loss are the primary lifestyle treatment for people with type II diabetes who are overweight. Weight loss can also lower blood pressure; high blood pressure and obesity are both risk factors in the development of cardiovascular disease. Diabetes and its complication
could be reduced or delayed by changing lifestyle and managing diabetes at home setting. ${ }^{[2,3]}$

Lifestyle is associated with the occurrence of diabetes mellitus and associated with development of complication. Making lifestyle changes is an excellent step towards diabetes management. Practice and lifestyle relationship with hypertension should be studied as complications related diabetes is increasing day by day.

## METHODS

Descriptive study was carried out in the two diabetic clinics of Kathmandu valley. They were selected purposively. The duration of the study was four weeks. Ethical approval was taken from the Tribhuvan University, Institute of Medicine, Nursing Campus Maharajgunj. Verbal informed consent was taken from every selected subject. Subjects were assured for the anonymity and confidentiality of the information and allowed to refuse to participate in the study at any time if they wish.

The sample size were 50 type II diabetic clients (25 clients with only diabetic and 25 clients with diabetic hypertensive) who were diagnosed as having type II
diabetes mellitus at least five years ago. They are selected purposively.

The research instrument was semi-structured interview questionnaire and had two parts. Demographic information related questionnaire were included in first part and the second part of questionnaire were related to diet, drinking habit, physical exercise, nature of work, smoking habit, and compliance to treatment regimen. Same mercury sphygmomanometer and stethoscope were used to measure clients' blood pressure for accuracy of measurement. Blood pressure of the clients was measured the nearest mm Hg on the same (right) arm with the subject seated, after at least 10 minutes rest. The blood pressure was measured for two times in the interval of 15 minutes to calculate the mean of systolic and diastolic blood pressure for analysis.

Analysis of demographic information and other responses was done in sums of frequency ( f ), percentage (\%) and arithmetical mean (x). By using the chi-square test; the relationship between blood pressure and lifestyle was analyzed. The level of significance was taken at
$\mathrm{p}<0.05$. The data was analyzed by using Statistical Package for Social Sciences version 11.5 for windows.

## RESULT

Out of 50 diabetic clients, the majority of respondents were from age group 40-49 years ( $34.00 \%$ ) and majority ( $62.00 \%$ ) of them was illiterate.

Systolic blood pressure level of all respondents of only diabetic had less than 130 mm Hg , whereas only 76 percent of diabetic with hypertensive respondents' systolic blood pressure was less than 130 mm Hg , and 24 percent of them systolic blood pressure was 130 mm Hg or more than 130 mm Hg . Diastolic blood pressure of all diabetic respondents' had less than 80 mm Hg ; whereas only 64 percent of diabetic with hypertensive respondents' diastolic blood pressure was less than 80 mm Hg and 36 percent of them diastolic blood pressure was 80 mm Hg or more. All diabetic with hypertensive respondents were on regular antihypertensive medicine except one respondent.

Table 1: Respondents' Blood Pressure Level.

| Blood Pressure | Respondents |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Only diabetic <br> $(\mathbf{n = 2 5})$ |  | Diabetic with Hypertension <br> $(\mathbf{n = 2 5})$ |  |
|  | Number | Percent | Number | Percent |
| Systolic blood pressure <br> $<130 \mathrm{~mm} \mathrm{Hg}$ <br> $\geq 130 \mathrm{~mm} \mathrm{Hg}$ |  |  |  |  |
|  | 25 | 100.00 | 19 | 76.00 |
| Diastolic blood pressure | - | - | 6 | 24.00 |
| $<80 \mathrm{~mm} \mathrm{Hg}$ <br> $\geq 80 \mathrm{~mm} \mathrm{Hg}$ | 25 | 100.00 | 16 | 64.00 |
|  | - | - | 9 | 36.00 |

Regarding low salt diet, 36 percent of only diabetic and 12 percent of diabetes with hypertension respondents consumed low salt diet than their family members. This shows significant association between amount of salt intake and blood pressure status as chi-square $p$ value was 0.047 . But there is no significant association
between use of extra salt and high blood pressure as chisquare $p$ value was more than 0.05 level ( 0.140 ). There is no significant association frequency of fruit consumption and state of blood pressure as the chi-square p-value was 0.776 .

Table 2: Respondents' Dietary Habits: Fat, Fatty and Junk Food.

| Food consumption | Respondents |  |  |  | $X^{2} p$ Value |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Only diabetic ( $\mathrm{n}=25$ ) |  | Diabetic with Hypertension$(\mathrm{n}=\mathbf{2 5})$ |  |  |
|  | Number | Percent | Number | Percent |  |
| Consumption of oil Not much Average amount Enough |  |  |  |  | 0.015 |
|  | 13 | 52.00 | 4 | 16.00 |  |
|  | 10 | 40.00 | 20 | 80.00 |  |
|  | 2 | 8.00 | 1 | 4.00 |  |
| Consumption of ghee <br> Daily <br> Often <br> Sometimes <br> Never |  |  |  |  | 0.083 |
|  | - | - | 3 | 12.00 |  |
|  | - | - | 2 | 8.00 |  |
|  | 10 | 40.00 | 5 | 20.00 |  |
|  | 15 | 60.00 | 15 | 60.00 |  |
| Consumption of fried food |  |  |  |  |  |



Regarding the consumption of vegetable, majority ( $80.00 \%$ ) of only diabetic respondents used to eat adequate amount of vegetable, whereas only 52 percent of diabetes with hypertensive respondents used to consume adequate amount of vegetable. But there is no significant association between amount of vegetable eaten and state of blood pressure (Chi-square p value $=0.106$ ).

Majority ( $52.00 \%$ ) of only diabetic respondents used to consume oil not much, whereas majority ( $80.00 \%$ ) of diabetes with hypertensive respondents used to consume average amount of oil. The chi-square $p$ value was 0.015 ,
showing a significant association between amount of oil consumption and high blood pressure. It means more the consumption of oil amount more the chance of having high blood pressure. But there is no significant association between frequency of consumption of ghee, fried food, packed/processed/junk food and high blood pressure (Chi-square p value is $0.083,0.674$ and 0.057 respectively).

Same as, no significant association was found between alcohol consumption, past smoker, present smoker and state of blood pressure (Chi-square $p$ value is 0.713 , 0.390 , and 0.384 respectively).

Table 3: Respondent' Lifestyle: Physical Exercise.

| Exercise Habit | Respondents |  |  |  | $\mathbf{2}$ |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | Only diabetic (n=21) |  | Diabetic with Hypertension (n=21) |  |  |
|  | Number | Percent | Number | Percent |  |
| Frequency of exercise <br> Daily |  |  |  |  |  |
|  | 21 | 100.00 | 19 | 90.47 | 0.147 |
| Duration of exercise <br> $<30$ minutes <br> $\geq 30$ minutes | - | - | 2 |  |  |
|  | 5 | 23.81 | 3 | 14.28 | 0.432 |

Table 4: Respondents' Lifestyle: Stress and Its Reduction.

| Characteristics | Respondents |  |  |  | $\mathbf{N}^{\mathbf{2}} \mathbf{p}$ Value |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | Only diabetic (n=25) |  | Diabetic with Hypertension (n=25) |  |  |
|  | Number | Percent | Number | Percent |  |
| Stress in life <br> Coping with stress | 13 | 52.00 | 15 | 60.00 | 0.569 |
| Self coping | 7 | 53.84 | 5 | 33.33 |  |
| Sharing <br> Pray | 4 | 30.76 | 9 | 60.00 | 0.359 |
|  | 2 | 15.38 | 1 | 6.66 |  |

Sixty percent of only diabetic and 88 percent of diabetes with hypertensive respondents were doing sedentary type of work and others were doing non-sedentary type of work. This shows significant association between nature of work and high blood pressure as chi-square $p$ value was 0.024 .

## DISCUSSION

The majority of respondents were female ( $72.00 \%$ ), with ethnic group Newar ( $42.00 \%$ ) and most of respondents were married ( $78.00 \%$ ). In this study, 46 percent respondents were found to have positive family history of type II diabetes (paternal and other blood relatives). One study conducted in India on 513 family members to
find out family history of diabetes, revealed that respondents' who have diabetes, family members with diabetic father, diabetic mother, and both parents diabetic, the prevalence was 6.48 percent, 10 percent, and 14.94 percent respectively. ${ }^{[4]}$

This study has revealed that systolic blood pressure of all only diabetic respondents was less than 130 mm Hg and diastolic blood pressure was less than 80 mm Hg , which is goal blood pressure recommendation for patients with diabetes mellitus according to American Diabetes Association (2001), National Kidney Foundation (2000), and Canadian Hypertension Society (1999).

This study found that there was no significant association between drinking of different types of milk (cow mil, dairy milk, buffalo milk and other type) and high blood pressure ( p value $=0.677$ ). This result was supported by the a study, as no association was observed between milk intake (whole milk or low fat milk) and blood pressure, and blood constituents such as glucose, HbAlc , highdensity lipoprotein cholesterol, or triacylglycerols. ${ }^{[5]}$

Sodium reduction is an established recommendation to reduce blood pressure. This study also shows significant association between use of less salt (than family members) and high blood pressure ( p value 0.047 ). This finding is consistent with the finding of one study in which prevalence of hypertension had been significantly higher among 12.2 percent of those who consumed 5 gm or more than 5 mg of salt per day. ${ }^{[6]}$

Meat and meat product is high in animal fat and there is less fiber. It is also suggested that it is better to avoid or reduce to consume meat or meat products by clients with diabetes mellitus and who have risk of high blood pressure. But there was no significant association between meat consumption and high blood pressure in this study ( p value $=0.813$ ).

A significant association between amount of oil consumption and high blood pressure was found (p value $=0.015$ ). This finding is supported by one study of United States that significant decrease in systolic blood pressure $(\mathrm{p}=0.009)$ and diastolic blood pressure ( $\mathrm{p}=0.0001$ ) was observed during the mono unsaturated fatty acid diet. ${ }^{[7]}$ All kind of cooking oil is 100 percent fat and have 120 calories per table spoon. ${ }^{[8]}$

A study done in Japan showed the blood pressure is 2-3 mm Hg higher in smokers than in nonsmokers. ${ }^{[9]}$ It is emphasized that on stopping smoking, which is the single best thing a person with diabetes, who can do to decrease their chances of developing heart and blood vessel disease. ${ }^{[10]}$ But, in this study, no significant association was found between past smoking habit and present smoking habit and high blood pressure ( p value $=0.390$ and 0.384 respectively). It might be due to small sample size.

Exercise helps the body use insulin and lower blood sugar levels. ${ }^{[11]}$ Ideally, diabetic clients should exercise 4-6 times a week for 30-60 minutes each time. In this study, equal number of both only diabetic and of diabetic with hypertension respondents ( $84 \%$ ) did regular physical exercise. However there was no significant association between frequencies of exercise (daily or once a week) and high blood pressure as chi-square p value was 0.147 .

Mental stress also precipitates diabetes and complication after diabetes. But if clients use stress reduction methods like relaxation, sharing, and problem solving, stress effect less on health. But there was no significant
association between presence of stress in life and high blood pressure ( p value $=0.359$ ).

## CONCLUSION

This study shows that all of the only diabetic respondents' systolic blood pressure was normal range. Majority of diabetic with hypertensive respondents' systolic and diastolic blood pressure were under control as they were in regular anti-diabetic and antihypertensive medicine. There was significant association between amount of oil consumption, use of less salt than family members, natures of daily work and high blood pressure. The positive dietary habits like consumption of whole meal flour, low fat milk, adequate vegetable, salad and no use of extra salt were more practiced by only diabetic respondents although there was no significant association.

Since hypertension can accelerate the onset and progression of both small and large vessel disease in diabetes mellitus, healthy lifestyle modification and compliance to treatment is mandatory in all diabetic clients. Clients should be aware that lifestyle modification is equally important for control blood glucose and prevent complications from diabetes.

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