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A STUDY ON PREVALENCE AND RISK FACTORS ASSOCIATED WITH HYPERTENSION IN DIABETES MELLITUS BY USING POISSON REGRESSION MODEL

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Abstract:
Hypertension is a leading risk factor for coronary heart disease or Cardio Vascular Disease, heart failure, stroke and renal disease and retinopathy. These complications of hypertension are also most common complication of Diabetes Mellitus patients and successful efforts to lower blood pressure could thus have substantial impact on population morbidity and mortality. We discuss the analysis of screening, measurement of hypertension, patient's history and also evaluating their systolic and diastolic pressure in Diabetes Mellitus Patients and diagnose prevention, and controlling these diseases and their associated risk factor of hypertension using Poisson Regression model estimates and also derived its conclusion.

Keywords: *Blood Pressure, BMI, Cardio Vascular Disease (CVD), Diabetes Mellitus (DM), Poisson Regression.*

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INTRODUCTION

High blood pressure or Hypertension is usually the state where in the cardiovascular system is lacking key nutrients and is under serious stress and deterioration. This is due to the heart's extra force required to push the blood through the arteries, eventually causing damage to those inner lining of the arteries. This, in turn, causes inflammation and leaves the arteries susceptible to the buildup of fatty plaque that can narrow or block the arteries and reduce blood flow to the body's organs. High blood pressures lead to kidney damage, heart failure, stroke and loss of vision if proper treatment is not taken. Unfortunately, high blood pressure is a "silent" condition that goes undetected until another problem arises that triggers the need for a physical exam, e.g. blurry vision, constant headaches, heart arrhythmia, kidney problems.

The key organs that are involved with high blood pressure include the heart, kidneys, arteries and the neural and hormonal systems. The combination of high blood pressure, obesity and diabetes is particularly stressful on the kidneys. High blood pressure is generally defined as a level exceeding 140/90 mm Hg on multiple occasions. The systolic blood pressure, which is the first number, represents the pressure in the arteries as the heart contracts and pumps blood throughout the circulatory system. The diastolic pressure, which is the second number, represents the pressure in the arteries as the heart relaxes after the contraction. An elevation of the systolic or diastolic blood pressure increases the risk of developing heart (cardiac) disease, kidney (renal) disease, hardening of the arteries (arteriosclerosis), (eye damage) and stroke (brain damage). Usually a high systolic number indicates problems with the cardiovascular system and the liver, while a high diastolic number indicates problems with the kidneys and the liver. These complications of high blood pressure are often referred to as end-organ damage because damage to these organs is the end result of chronic (long duration) high blood pressure. Accordingly, the diagnosis of high blood pressure in an individual is important so that efforts can be made to normalize the blood pressure and thereby, prevent the complications. For some people, high blood pressure may be defined at a level lower than 140/90 mm Hg.

For example, in certain situations, such as in patients with long duration (chronic) kidney diseases that spill protein into the urine (proteinuria), the blood pressure is ideally kept at 125/75, or even lower. The purpose of reducing the blood pressure to this level in these patients is to slow the progression of kidney damage. Patients with diabetes may likewise benefit from blood pressure that is maintained at a level lower than 140/90. In addition, African-Americans, who have an increased risk for developing the complications of high blood pressure, may decrease this risk by reducing their diastolic blood pressure to 80 mm Hg or less.

Blood pressure varies throughout the day in response to factors such as excitement, stress and exercise, however it quickly returns to a normal level. Blood pressure also increases with age, so what may be a normal blood pressure reading for someone in their 60's may be considered abnormally high for someone in their 20's. The continuous high pressure of blood puts extra strain on the blood vessels and internal organs. Often people do not consult a doctor until after the condition has progressively caused damage to the blood vessels and internal organs (particularly the heart and kidneys). For this reason, hypertension has been referred to as the "silent killer". In general, the longer high blood pressure is present and the higher it is, the more likely it is that damage will occur. People with hypertension are at greater risk of developing medical conditions such as:

- Stroke
- Enlarged heart
- Heart attack
- Kidney failure
- Heart failure
- Damage to the retina of the eye

Complication of Hypertension

The following are the complication of Hypertension.

Heart Complication

- Hypertensive heart disease
- Left ventricular hypertrophy
- Diastolic dysfunction
- Congestive Heart Failure
- Cardiac arrhythmias
- Abnormalities of blood flow due to atherosclerotic CAD micro vascular disease.

Brain

- Cerebral infarction
- Subarachnoid or intra cerebral hemorrhage
- Hypertensive encephalopathy

Kidney

- Renal Injury
- ESRD(End Stage Renal Disease)

Peripheral Arteries

- Atherosclerosis
- Peripheral Vascular Disease

Eye

- Retinopathy

STAGE I Hypertension

The DM patients with systolic blood pressure level 140-159 mm Hg and diastolic blood pressure 90-99 mm Hg are classified as stage one Hypertension.

Risk Factors

- If patients fall under stage one hypertension category, then assess for risk factors like

age > 55 years, male, smoking, family history of premature CVD(Cardio Vascular Disease), BMI>25 /m^2, diabetes.

STAGE II Hypertension

- The DM patients with systolic Blood Pressure Level greater than or equal to 160mm Hg and Diastolic Pressure Level greater than or equal to 100 mm Hg are classified as Stage two Hypertension.
- For all patients with stage two Hypertension i.e., if the systolic BP greater than or equal to 160mm Hg and Diastolic Pressure Level greater than or equal to 100 mm Hg, need Life Style Modification (LSM) and active management and regular follow up.

Hypertension (HT) Provides a measure of Systolic and diastolic pressures are use as a guideline to determine whether your blood pressure category is normal, pre HT, stage I HT and Stage II HT.

Table 1: Classification of High Blood Pressure (HT)

Category	Systolic (mm Hg)	Diastolic (mm Hg)
Normal	<120	<80
Pre HT	120-139	80-89
Stage I HT	140-159	90-99
Stage II HT	≥160	≥100

Body Mass Index (BMI) provides a measure of weight relative to height to use as a guideline to determine whether your weight is at a normal, overweight, or obese level.

Table 2: Classification of BMI

Category	Range	Risk Level
Under weight	<18.5	Low (increased risk of other clinical problems)
Normal range	18.5 – 22.9	Average
Overweight	23 – 24.9	Increased
Obese	25 – 29.9	Moderate
Very obese	≥30	Severe

Diagnosis

The diagnosis of high blood pressure is much more than reading the numbers of the monitor. It may take several months of doctor visits, monitoring and testing, including an electrocardiogram to prevent a false reading or diagnosis. The diagnosis starts with measuring your blood pressure using a mercury manometer and a properly fitted arm cuff, with your elbow at the same level as your heart, not below it. There is usually a small difference between the left and the right side. Ideal systolic-diastolic pressure values are under 120/80. Values over 180/110 are a definite concern. Values greater than 140/90 are a concern especially, if you have other risk factors such as being overweight. You may require further testing, which may involve wearing a small automatic measuring device and recorder for 24 hours. To prevent a false diagnosis, have your blood pressure checked while sitting, standing and lying down – if readings skyrocket when you change position, this may indicate a problem with the adrenal glands. All this information is collected and analyzed by your doctor to decide on a proper diagnosis.

For diagnosis of Hypertension to be made the blood pressure must remain elevated for several readings over a period of time. If the blood pressure remains elevated the doctor may also order blood tests, urine tests, an ECG (tracing of the heart's electrical activity), a chest x-ray and examine the blood vessels in the eye with a special light (ophthalmoscope). These tests assess for any damage already caused by the hypertension.

Hypertension is usually defined as diastolic blood pressure of 90mm/Hg or higher or a Systolic pressure of 140mm/Hg or higher and Biologic factors include anxiety, meals, tobacco, alcohol, temperature changes, exertion, and pain. Due to these limitations in the test-retest reliability of blood pressure measurement, it is commonly recommended that hypertension be diagnosed only after more than one elevated reading is obtained on each of three separate visits over a period of one to several weeks [1]. Milder forms of hypertension predict progression to more severe elevations and development of cardiovascular disease [1, 2, 3]. CHD mortality begins to increase at systolic blood pressures above 110 mmHg and at diastolic pressures above 70 mmHg [4]. The diastolic blood pressure above which therapy has been proven effective (i.e., diastolic blood pressure. 90 mm Hg) is to a large extent based on the artificial cut points chosen for study purposes rather than on a specific biologic cut point defining increased risk. The CHD mortality risk associated with blood pressure occurs

Table 3: Classifications of Parameter for DM with HT

Parameters Name	Description
1.DM	Diabetes Mellitus
2.Gender	Gender(Male –M, Female-F)
3.Age	Age(≤ 50 , > 50)
4.BMI	Body Mass Index$(kg/m)^2$
5.FBS	Fasting Blood Sugar
6.SBP	Systolic Blood Pressure(mm Hg)
7.DBP	Diastolic Blood Pressure(mm Hg)
8.CVD	Cardio Vascular disease(Yes, No)
9.WC	Waist Circumference(Normal ,Obese)
10.FH	Family History(HT or DM)

on a continuum that extends well below the arbitrarily defined level for abnormal blood pressure, beginning for systolic blood pressure above 110 mm Hg and for diastolic pressure above 70 mm Hg (Neaton et al., 1992). Errors in measuring blood pressure may result from instrument, observer and/or patient factors [5].

HT and DM usually have the same risk factors pertaining to unhealthy lifestyle or behavioral risk factors such as lack of exercise, stress, smoking and poor eating habits which lead to overweight and obesity [6, 7]. Many anthropometric methods have been employed for measuring overweight and obesity. The simple methods which are easy to obtain for screening programmes and for self monitoring are waist circumference (WC) and body mass index (BMI) which are calculated from weight and height [8, 9]. The organs most affected by HBP are the vascular system, heart, kidney, brain and eyes (4). Consequently, controlling blood pressure is revealed as the main therapeutic and prophylactic approach for the prevention of these complications [10].

MATERIALS AND METHODS

Study Area and Population **-** Data have been collected from the Suruthi Diabetic Centre, Kumbakonam. Thanjavur District, India. In this data, the parameters that includes, Sex, Age, BMI, Blood Pressure and Disease variables from 440 diagnosed patients of the Hypertension. We apply the Poisson distribution to model the distribution of the cell counts in a multiway contingency table for DM patients associated with Hypertension disease which are analyzed by using the SAS software, PROC GENMOD to perform a Poisson regression analysis of the data with a log link function. This type of model is also called as a log linear model.

Poisson Regression Model

When processing discrete data, two commonly used probability distributions are the binomial distribution and the Poisson distribution. The binomial distribution is used when an event has only two possible outcomes (success, failure); the Poisson distribution describes the count of the number of random events within a fixed interval of time or space with a known average rate.

When the response or dependent variable is a data of countable nature (which takes nonnegative integer values, 0, 1, 2, ...), the linear model based on normal distribution is not appropriate to describe the relationship between the response variable and a set of predictor variables and cannot use the logistic regression model because the response variable is not a binary variable (0, 1). In this case, the Poisson regression model is the appropriate model to describe it [11]. The Poisson regression model is commonly applied to study the occurrence of rare events as a function of a set of predictor variables [12]. The Poisson regression model has been applied in many disciplines, including Biology, Demography and Medicine especially for data relating to DM. Cameron et al.,(1998) used the Poisson regression model in health demand studies model data on the number of times that individuals consume a health service and estimate the impact of health status and a health insurance.

Gardner et al., (1995) [13] applied the Poisson regression model in Biometric studies, including epidemiology to investigate the occurrence of selected diseases in exposed and unexposed subjects in experimental and observational studied. Travier et al., (2003) [14] used the Poisson regression model to study cancer incidence among male Swedish veterinarians and other workers of the veterinary industry. Hardin et al., (2003) [15] studied the FIML estimating equation for Poisson regression.

The Poisson distribution is the natural choice to model outcome variables that are nonnegative counts. The Poisson density is given by

$$f(y/\lambda) = \frac{e^{-\lambda}\lambda^{y}}{y!} \quad (1)$$

where

$$E(y) = \lambda > 0 \quad (2)$$

$$V(y) = \lambda > 0 \quad (3)$$

The joint density for n independent outcomes subscripted from 1,…,n is then given as the product of the densities for the individuals outcomes

$$f(y_1, \ldots, y_n/\lambda) = \prod_{i=1}^{n} \frac{e^{-\lambda}\lambda^{y_i}}{y_i!} \quad (4)$$

$$= \prod_{i=1}^{n} exp\{-\lambda + y_i \ln(\lambda) - ln(y_i!)\} \quad (5)$$

$$= \prod_{i=1}^{n} exp\{-\lambda + y_i ln(\lambda) - ln\Gamma(y_i + 1)\} \quad (6)$$

The likelihood is a restatement of the joint density where we consider the outcomes as given and model the parameter as unknown

$$L(\lambda/y_1, \ldots, y_n) = \prod_{i=1}^{n} exp\{-\lambda + y_i ln(\lambda) - ln\Gamma(y_i + 1)\} \quad (7)$$

Since our goal is to introduce covariates that model the outcome, we add a subscript to the notation allowing the mean to reflect a dependence on a linear combination of the covariates and their combination of the covariates and their associated coefficients. We also replace the usual presentation of the Poisson distribution using μ for the expected value $\boldsymbol{\lambda}$. Replacing $\boldsymbol{\lambda}$ with μ is merely for notational consistency and has no effect on the derivation of the estimating equation.

$$L(\mu/y_1, \ldots, y_n) = \prod_{i=1}^{n} exp\{-\mu_i + y_i ln(\mu_i) - ln\Gamma(y_i + 1)\} \quad (8)$$

As in the previous derivation for linear regression, we introduce covariates into the model through the expected value μ of the outcome variable and we assume a collection of independent covariates with associated coefficients to be estimated called the linear predictor $\eta_i = x_i \beta \epsilon \Re$ note that x_i is the ith row of the design matrix X.

We introduce the linear predictor into the model in such a way that the range restrictions of the distribution are observed. In this particular case, the variance of the outcome is given by

$$V(y_i) = \mu_i > 0 \quad (9)$$

which depends on the expected value to the outcome. In fact, for the Poisson distribution, the variance is equal to the expected value. Therefore, we should parameterize the linear predictor to enforce a range (0, ∞). The natural or canonical, choice obtained from our derivation is

$$g(u_i) = \ln(\mu_i) = x_i\beta \quad (10)$$

This parameterization of the canonical Poisson link function implies an inverse relationship given by $g^{-1}(x_i\beta) = exp(x_i\beta) = \mu_i$, which ensures a nonnegative fit from the linear predictor. Under this parameterization for the expected value, the final log-likelihood is given by

$$\mathcal{L}(\beta/X, y_1, \ldots, y_n) = \sum_{i=1}^{n} \{-\exp(x_i\beta) + y_i x_i \beta\} - ln\Gamma(y_i + 1) \quad (11)$$

The general Full Information Maximum Likelihood estimating equation $\Psi(\Theta) = 0$ for $\Theta = (\beta)$ is then

$$\left[\left\{\frac{\partial \mathcal{L}}{\partial \beta_j} = \sum_{i=1}^{n}\left(\frac{y_i}{\mu_i} - 1\right)\left(\frac{\partial \mu}{\partial \eta}\right)_i x_{ji}\right\}_{j=1,\ldots,p}\right]_{p\times1} = [0]_{p\times1}$$

Where there are no ancillary parameters.

STATISTICAL RESULTS AND DISCUSSION

Table 4: Distribution of Age, Gender, DM, BMI, FBS, CVD, WC, FH for the Prevalence of Diabetic Mellitus and Risk Factor of Hypertension in Percentage.

Parameter	Number of patients with normal HT &Percentage in (%) n=168	Number of patients with Pre HT &Percentage in (%) n=89	Number of patients with Stage I HT &Percentage in (%) n=107	Number of patients with Stage II HT &Percentage in (%) n=76	Total n=440
Age					
0-25	16(9.5)	4(4.5)	2(1.9)	0(0)	22(5.0)
26-50	10(60.1)	57(64.0)	49(45.8)	27(35.5)	234(53.2)
51-75	46(27.4)	26(29.2)	54(50.5)	44(57.9)	170(38.6)
76-100	5(3.0)	2(2.2)	2(1.9)	5(6.6)	14(3.2)
Gender					
Male	57(33.9)	44(49.4)	45(42.1)	25(32.9)	171(38.9)
Female	111(66.1)	45(50.6)	62(57.9)	51(67.1)	269(61.1)
DM status					
Yes	134(79.8)	74(83.1)	85(79.4)	61(80.3)	354(80.0)
No	34(20.2)	15(16.9)	22(20.6)	15(19.7)	86(19.5)
BMI					
<18.5	2(1.2)	0(0)	2(1.9)	3(3.9)	7(1.6)
18.5-22.9	41(24.4)	16(18.0)	19(17.8)	17(22.4)	93(21.1)
23-24.9	25(14.9)	19(21.3)	29(27.1)	14(18.4)	87(19.8)
25-29.9	61(36.3)	40(44.9)	31(29.0)	22(28.9)	154(35.0)
≥30	39(23.2)	14(15.7)	26(24.3)	20(26.3)	99(22.5)
FBS					
<100 mg/dl	11(6.5%)	3(3.4%)	12(11.2)	9(11.8)	35(8.0)
100-125 mg/dl	25(14.9%)	19(21.3%)	24(22.4)	14(18.4)	82(18.6)
≥126mg/dl	132(78.6%)	67(75.3%)	71(66.4)	53(69.7)	323(73.4)
CVD					
Yes	76(45.2)	47(52.8)	53(49.5)	41(53.9)	217(49.3)
No	92(54.8)	42(47.2)	54(50.5)	35(46.1)	223(50.7)
Waist Circumference					
Normal	107(63.7)	51(57.3)	63(58.9)	49(64.5)	270(61.4)
Obese	61(36.3)	38(42.7)	44(41.1)	27(35.5)	170(38.6)
Family History					
Yes	67(39.9)	37(41.6)	40(37.4)	36(47.4)	180(40.9)
No	101(60.1)	52(58.4)	67(62.6)	40(52.6)	260(59.1)

Table 5: Analysis of Parameter Estimates (Prevalence of Diabetes mellitus patients by Using FBS, Non-diabetes, Pre-diabetes, Patients with DM)

Parameter	DF	Estimate	S.E	Wald 95%CL		Chi-square	Pr>Chi -square
Intercept	1	-1.7093	0.1783	-2.0588	-1.3597	91.86	<0.0001
FBS(Non Diabetes)	1	0.1168	0.4025	-0.6720	0.9056	0.08	<0.7716
FBS(PWDM&PD)	1	0.8839	0.2148	0.4630	1.3048	16.94	<0.0001
Age	1	-0.0430	0.2045	-0.4437	0.3578	0.04	<0.8336

Table 6: LR Statistics for Type 1 Analysis of FBS and Age

Parameter	Deviance	DF	Chi-square	Pr>Chi - square
Intercept	18.6295	-	-	-
FBS	3.1544	2	15.48	<0.0004
Age	3.1104	1	0.04	<0.8338

Table 7: Analysis of parameter estimates of normal tension, Pre-hypertension, Stage I and stage II hypertension

Parameter	DF	Estimate	S.E	Wald 95%CL		Chi-square	Pr>Chi-square
Intercept	1	-1.2590	0.2098	-1.6701	-0.8478	36.01	<0.0001
Normal tension	1	-25.0785	34132.10	-66922.8	66872.62	0.00	<0.9994
Pre hypertension	1	0.7000	0.2345	0.2403	1.1597	18.91	<0.0028
Stage I & Stage II Hypertension	1	0.7622	0.2256	0.3200	1.2044	11.41	<0.0007
age	1	0.4552	0.1602	0.1412	0.7692	8.07	<0.0045

The Table- 5 provides the estimates of the parameters for the DM patients for FBS, with the intercept value is -1.7093, the regression coefficient of the variable FBS (Non Diabetes) is 0.1168 which shows 11.68% contribution from FBS, the regression coefficient of the variable, "Patients with DM and Pre-diabetes (PWDM&PD)" value is 0.8839, which contributes 88.39% from the PWDM&PD. From this table, it is observed that the Non Diabetes p- value is 0.7716 which shows highly insignificant. Hence, there is no any evidence to provide among the Non Diabetes patients. Similarly we compare these two treatment effects in Patients with Diabetes Mellitus and Pre-diabetes (PWDM&PD) are highly significant and these two factors influence the normal patients changes into DM patients. The diagnosis of DM patients is highly affected by FBS. In this study, those who are getting high fasting blood sugar, they are treated as DM patients.

In Table -6, Type 1 analysis shows that each entry in the deviance column represents the deviance for the model containing the effect for that row and all effects preceding it in the table. i e)., The deviance corresponding to FBS in the table is the deviance of the model containing an intercept and FBS. As more terms are included in the model, the deviance decreases. Entries in the chi-square column are likelihood ratio statistics for testing the significance of the effects added to the model containing all the preceding effects. The chi-square value of 15.48 for FBS represents twice the difference in log likelihoods between fitting a model with only an intercept term and a model with an intercept and FBS. Since the scale parameter is set to 1 in this analysis, this is equal to the difference in deviances. Since two additional parameters are involved, this statistic can be compared with a chi-square distribution with 2 degrees of freedom. The resulting p-value of less than 0.0004 indicates that this variable is highly significant. Similarly, the chi-square value of 0.04 for age represents the difference in log likelihoods between the model with the intercept and FBS and the model with intercept, FBS is highly significant and age is not significant.

The Table- 7 provides the analysis of parameter estimates for the Hypertension patients, the regression coefficient of the variable Normal tension is -25.0785, the regression coefficient of the variable Pre-hypertension is 0.7000 and the regression coefficients of the variable of Stage I and stage II Hypertension is 0.7622. From this table, we observe that the Normal tension p- value is 0.9994 which is highly insignificant. Hence, we need not provide treatment for normal hypertension patients. Because their systolic pressure and diastolic pressure level is normal and there is no necessity to provide treatment among the normal tension patients. Similarly we observe that the two treatment effect for Pre-hypertension, Stage I and Stage II Hypertension are highly significant and these two factors influence the DM patients with Hypertension. Stage I and Stage II groups must take treatments for to avoid CVD and stroke etc. because high blood pressure can lead to kidney damage, heart failure, stroke and loss of vision from the damage to retina. In my research those who are having stage I and Stage II hypertension are severely affected by CVD and some of them affected by stroke. The result of estimated value of the 95% of Wald confidence limits associated with Pre-hypertension, Stage I and Stage II Hypertension and DM are provided in Table-7.

Table 8: LR Statistics for Type 1 Analysis

Parameter	Deviance	DF	Chi-square	Pr>Chi-square
Intercept	237.7761	-	-	-
Hypertension	46.0266	3	191.75	<0.0001
Age	37.6919	1	8.33	<0.0039

In Table -8, Type 1 analysis shows that each entry in the deviance column represents the deviance for the model containing the effect for that row and all effects preceding it in the table. ie)., The deviance corresponding to Hypertension in the table is the deviance of the model containing an intercept and Hypertension. As more terms are included in the model, the deviance decreases. Entries in the chi-square column are likelihood ratio statistics for testing the significance of the effects added to the model containing all the preceding effects. The chi-square value of 191.75 for Hypertension represents twice the difference in log likelihoods between fitting a model with only an intercept term and a model with an intercept and Hypertension. Since the scale parameter is set to 1 in this analysis, this is equal to the difference in deviances. Since three additional parameters are involved, this statistic can be compared with a chi-square distribution with 3 degrees of freedom. The resulting p-value of less than 0.0001 indicates that this variable is highly significant. Similarly, the chi-square value of 8.33 for age represents the difference in log likelihoods between the model with the intercept and hypertension and the model with intercept, hypertension, and age. This effect is also highly significant, as indicated by the small p-value.

CONCLUSION

The present study indicates (as in Table - 6) that, FBS is the major risk factor for DM patients. Also it is surprising that the parameters Age and Hypertension are highly significant factors for DM patients (as in Table – 8). Hence they must take proper treatments to avoid CVD and stroke. The findings of the study emphasized the importance of maintaining the care and control of hypertension among DM patients and suggested regular physical exercise, taking medicine on a regular basis, having ongoing medical care, maintain a healthy diet, reducing occupational and mental pressure, and quit smoking may help reduce high blood pressure among DM patients.

Prevention

High blood pressure which is also called hypertension, increases our risk of developing many serious health problems, including CHD and stroke, kidney disease. We can avoid developing hypertension by adopting these healthy lifestyle choices:

- Maintain a healthy body weight ie)., people who are overweight should try to reduce their weight and people who are normal weight should avoid adding on any pounds.
- Eat balanced diet ie)., Eating healthy food that support to keep your blood pressure under control and take plenty of fruits and vegetables, especially which food contains potassium. To avoid excess calories, fat and sugar.
- Avoiding / Limiting alcohol
- Physical exercise regularly, provides better improvement and control the blood pressure and moderate exercise for about thirty minutes three times a week.
- Effectively treating medical conditions such as diabetes and high blood pressure.
- Monitoring blood pressure range of 120-139/80-89 mm Hg (that puts you at decreased risk of developing hypertension).

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