The Prevalence of Diabetes and Hypertension

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Introduction

Diabetes mellitus is a major risk factor for cardiovascular disease (CVD). Approximately two-thirds of people with diabetes die from complications of CVD. Nearly half of middle-aged peo- ple with diabetes have evidence of coro- nary artery disease (CAD), compared with only one-fourth of people without diabetes in similar populations. Patients with diabetes are prone to a number of cardiovascular risk factors beyond hyperglycemia. These risk fac- tors, including hypertension, dyslipi- demia, and a edentary lifestyle, are par- ticularly prevalent among patients with diabetes. To reduce the mortality and morbidity from CVD among patients with diabetes, aggressive treatment of glycemic control as well as other cardio- vascular risk factors must be initiated. Studies that have compared anti- hypertensive treatment in patients with diabetes versus placebo have shown reduced cardiovascular events. The Unit- ed Kingdom Prospective Diabetes Study (UKPDS), which followed patients with diabetes for an average of 8.5 years, found that patients with tight BP control (< 150/< 85 mmHg) versus less tight control (< 180/< 105 mmHg) had lower rates of myocardial infarction (MI), stroke, and peripheral vascular events. In the UKPDS, each 10-mmHg decrease in mean systolic BP was associated with a 12% reduction in risk for any complica- tion related to diabetes, a 15% reduction for death related to diabetes, and an 11% reduction for MI. Another trial followed patients for 2 years and compared calci- um-channel blockers and angiotensin- converting enzyme (ACE) inhibitors, with or without hydrochlorothiazide against placebo and found a significant reduction in acute MI, congestive heart failure, and sudden cardiac death in the intervention group compared to placebo The Hypertension

Optimal Treat- ment (HOT) trial has shown that patients assigned to lower BP targets have improved outcomes. In the HOT trial, patients who achieved a diastoli BP of < 80 mmHg benefited the most in terms of reduction of cardiovascular events. Other epidemiological studies have shown that BPs > 120/70 mmHg are associated with increased cardiovascular morbidity and mortality in people with diabetes. The American Diabetes Associ- ation has recommended a target BP goal of < 130/80 mmHg. Studies have shown that there is no lower threshold value for BP and that the risk of morbidity and mortality will continue to decrease well into the normal range. Many classes of drugs have been used in numerous trials to treat patients with hypertension. All classes of drugs have been shown to be superior to place- bo in terms of reducing morbidity and mortality. Often, numerous agents (three or more) are needed to achieve specific target levels of BP. Use of almost anydrug therapy to reduce hypertension in patients with diabetes has been shown to be effective in decreasing cardiovascular risk. Keeping in mind that numerous agents are often required to achieve the target level of BP control, recommend- ing specific agents becomes a not-so- simple task. The literature continues to evolve, and individual patient conditions and preferences also must come into play.

Hypertension causes 7.5 million deaths globally every year which is about 12.8% of total annual deaths. This accounts for 57 million disability adjusted life years (DALYS) or 3.7% of total DALYs. India is no stranger to this problem and has a prevalence ranging from 17% to 21% in all states which may be a lot more inflated if the entire population is screened. The prevalence of HT is 1.5-2.0 times more in those with diabetes mellitus than in those without diabetes mellitus, whereas almost one-third of the patients with hypertension develop diabetes mellitus later. The presence of hypertension in diabetic patients substantially increases the risks of coronary heart disease, stroke, nephropathy and retinopathy. When hypertension coexists with diabetes mellitus, the risk of cardio vascular disease is increased by 75%, which further contributes to the overall morbidity and mortality of already high risk population?. Early detection of hypertension and diabetes mellitus reduces the risk of various complications. The objectives were to estimate the prevalence of hypertension and diabetes mellitus among urban population in the field practice area of a tertiary care hospital in Coimbatore and to find out the associated risk factors for hypertension and diabetes in an urban population.

METHODS

A Community based cross-sectional study was conducted among 299 subjects above 30 years of age selected from 6 wards of the field practice area of a tertiary care hospital in Coimbatore during April to June 2018. Out of the 13 wards, 6 wards were selected for the study using simple random sampling (lottery method). Using population proportion to sample size, the study participants were randomly selected from all 6 wards. The health inspector and medical social workers visited the wards on the previous day of the study and sensitized the public about the screening. The questionnaire consisted of the socio-demographic data, anthropometry, dietary practices, physical activity, smoking and alcohol history, knowledge, attitude and practice towards diabetes mellitus and hypertension. Aneroid sphygmomanometer was used to measure blood pressure after calibration with a mercury manometer. A standardized glucometer was used to measure random blood sugar. Classification of hypertension and diabetes mellitus was done as per the latest JNC (Joint National Committee) 8 and ADA (American Diabetes Association) guidelines respectively. Waist circumference above 90 cm in males and above 80 cm in females was considered as abdominal obesity as per WHO guidelines.

Inclusion criteria

Those who were known diabetes mellitus and pertensive on treatment were also included in the study.

Exclusion criteria

Those who were mentally ill and bed ridden patients were excluded from the study.

Institutional ethical clearance and informed consent were obtained. Data analyzed using SPSS version 23.0. Chi square test was used to find association between various factors and p value less than 0.05 was considered significant.

RESULTS

Out of the 299 subjects included in the study, 131 were males (44%) and 168 were females (56%). The prevalence of diabetes mellitus was 32.44% and prevalence of hypertension was 38.8%. The prevalence of diabetes mellitus and hypertension was more in elderly age group (Table 1).

Among the 97 diabetics and 116 hypertensive identified in the study, 12.3% diabetics and 17.24% hypertensive were newly detected cases along with a significant number of prediabetics (5.3%) and prehypertensives (18%). About 49% of the known diabetics did not

have optimal glycemic control and 68.3% of them were found to have uncontrolled high blood pressure at the time of

DISCUSSION

The prevalence of diabetes and hypertension in the study population was high among the 5th and 6th decades of life. Also in spite of very few subjects survive above 80 years, the proportion of hypertension and diabetes is alarmingly high (nearly 2/3) among them. This clearly indicates most of the people who develop NCD's succumb to premature death. In a study conducted in urban Varanasi by Singh et al, the prevalence of hypertension was 32.9% and pre hypertension was 41.7%. The prevalence of hypertension was nearly consistent with our study but the prevalence of pre hypertension was high when compared to present study. They found that risk factors like elderly age, overweight and obesity, tobacco and alcohol consumption were associated with hypertension which was consistent with our study but tobacco and alcohol consumption was not associated with hypertension in present study." In present study we found that patients with uncontrolled hypertension were 68.3% which was nearly similar to this study (64.9%). The prevalence estimated in the current study was much higher than that estimated by Nellore (22.3%) and Bihar (37.95%).9,10Kokiwar et al in his study found that the overall prevalence of hypertension hypertension was 19.04% and 18.8% respectively." The prevalence of hypertension was high when compared with this study. Similar to present study the proportion of hypertensive was high in elderly age group and in patients with sedentary activity and increased BMI. The study also stated that there was no significant association between alcohol intake and hypertension which was similar to current study." and pre Around 20% of the known hypertensive reported to be non-adherent to hypertensive medications. This was similar to the study done by Katapadi et al where 24% non-adherence was reported among hypertensive patients." The prevalence of diabetes mellitus was found to be 32.44% in present study. Almost one in every third person was found to be diabetic in present study. Study by Bharathi et al reported newly diagnosed diabetes mellitus of 8.4%." Similar results was reported in current study. The prevalence of diabetes was 14.6% in a study conducted by Kapil et al which had lower prevalence than present study." In the study by Bharati et al showed that proportion of diabetes mellitus was higher in persons aged >50 years and was reported to be associated with sedentary occupation, non-vegetarian diet, obesity, non- alcoholic and non-smokers. Consistent result was observed in this study also. Around 19.5% of the known diabetic reported to be non-

adherent to anti diabetic medications. This was similar to the study done by Santhanakrishnan et al where 24% non- adherence was reported among diabetic patients.' 15.

Comparison of general and clinical characteristics of elderly participants of Kahrizak Study

	Women Mean ± SD
Age(Year) [#]	**77 ± 8**
Age Categorization	29
<70	45
70-80	73
>80	
Body mass index (Kg/m^2) [#]	**26.1 ± 5.6**
Body mass index (BAPEN categorization) [#]	
Underweight	59
Normal	24
Overweight	57
Body mass index (Normal categorization) [*]	
Underweight	10
Normal	51
Overweight	86
Fasting blood sugar (mg/dl) [*]	**97.7 ± 38.2**
Systolic blood pressure (mmHg)	**132±24.5**
Diastolic blood pressure (mmHg)	**76.6±14.9**
Marriage status [#]	
Married	8
Single	13
Separated	22
Widowed	104

*: $P < 0.05$

[#]: $P < 0.001$

CONCLUSION

The study reported high prevalence of diabetes mellitus and hypertension among urban population with high prevalence among elderly population. Both diabetes mellitus and hypertension associated with behavioural and biological risk factors. 20% non- adherence was reported for both anti diabetic and anti- hypertensive medications. Was Recommendations Periodic health education and awareness activities regarding biological and behavioral factors such as importance of physical activity, avoidance of smoking and alcohol should be provided. Awareness on knowledge about early signs and symptoms and risk factors needs to be imparted to the study population and the subsequent positive attitudes and practices adopted by the community should be reassessed by periodic studies carried out in the same population in future.

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