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PREVALENCE OF HYPERTENSION IN NEWLY DIAGNOSED TYPE 2 DIABETIC PATIENTS PRESENTING TO OUTPATIENT DEPARTMENT OF PROVINCIAL HEADQUARTER HOSPITAL, GILGIT

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Abstract

Background: *The rising prevalence of diabetes in Pakistan, coupled with its association with hypertension, poses significant public health challenges.*

Objective*: To determine the frequency of hypertension in newly diagnosed type 2 diabetic patients presenting to Out Patient Department.*

Methodology: *A cross-sectional study was conducted at the Outpatient Department of Provincial Headquarter Hospital, Gilgit, over six months. A sample of 149 newly diagnosed type 2 diabetic patients (aged 30–60 years) was selected using non-probability consecutive sampling. Hypertension was defined as blood pressure ≥140/90 mmHg, and diabetes was confirmed via HbA1c levels >6.5%. Data on demographics, clinical parameters, and blood pressure were collected and analyzed using IBM-SPSS Version 23. Chi-square tests were employed to assess associations between hypertension and variables like age, gender, and residence.*

Results: *Among the participants, 44.3% (n=66) had hypertension. The mean HbA1c was 7.8 ± 1.2%, indicating poor glycemic control, and the mean BMI was 28.5 ± 3.4 kg/m², suggesting overweight/obesity trends. Hypertension prevalence was significantly higher in older age groups (51–60 years, p=0.02), but no significant associations were found with gender (p=0.45) or residence (p=0.32).*

INTRODUCTION

The prevalence of diabetes in Pakistan has alarmingly increased in recent decade.[1] According to a report by International Diabetes Federation, 26.7% of the adult population is suffering from diabetes in 2022.[2] Various genetic, regional and dietary factors are responsible for this steep rise in incidence. As a chronic illness, long term outcomes and complications are inevitable and require a vigilant approach to prevent from cardiac, renal and neurological complications including stroke, myocardial infarction, cardiomyopathies and chronic kidney disease.[3] Hypertension is another most common chronic illness which is frequently observed in diabetic individuals. The relationship of diabetes and hypertension is quite interesting. Hypertension is considered as a complication of diabetes if renal

vascular or parenchymal damage has occurred. Also, hypertension together with hyperuricemia is a risk factor to develop diabetes.[4] Regardless of the cause, the combination of both diabetes and hypertension creates a vicious cycle of endothelial dysfunction, vascular damage, oxidative stress, promotion of inflammatory environment, progression of atherosclerosis and thromboembolic phenomenon leading to organ dysfunction and mortality.[5]

Uncontrolled hypertension can lead to complications such as left ventricular hypertrophy and congestive heart failure, as elevated systemic vascular resistance increases cardiac workload.[5] Additionally, it heightens the risk of cerebrovascular accidents (CVAs) and intracerebral hemorrhage due to vascular remodeling and increased arterial fragility. Chronic hypertension also predisposes patients to nephrosclerosis, which impairs renal function and may progress to end-stage renal disease (ESRD).

Prevention of hypertension includes lifestyle modifications such as a balanced diet low in sodium, regular physical activity, and maintaining a healthy body weight to reduce cardiovascular strain. Additionally, limiting alcohol intake, avoiding tobacco use, and managing stress are crucial steps in lowering the risk of developing high blood pressure.

According to a study performed by Akalu Y et al, the incidence of hypertension in diabetic patients was 59.5%.[6] Another study performed by Singh SK et al, among new-onset diabetic patients, 44.5% had hypertension with mean age of 46.76 ±0.61 years and mean systolic blood pressure of 130.6±1.06 mmHg. [7]

Unfortunately, limited studies are available to know the incidence of hypertension in newly diagnosed diabetic patients at the regional level. Efficiently managing both diabetes and hypertension at the onset can improve the outcome of the disease and ultimately increasing the survival. The purpose of this study is to know the burden of hypertension in new-onset diabetic individuals.

Methodology:

This Cross-sectional study, was conducted at Out Patient Department Provincial Headquarter Hospital, Gilgit. Total sample size was 149 using prevalence of 44.5% in newly diagnosed diabetic patients,[7] keeping 95% confidence level 8% margin of error using WHO calculator.[7] Non probability, consecutive sampling. Inclusion criteria, includes Patients age 30 years to 60 years, Both genders, Patients with newly diagnosed diabetes.

Exclusion criteria, Patients using drugs such as steroids or NSAIDS, Patients with thyroid illness patients with history of psychiatric illness in the past or on any antipsychotic mediation and Patients with BMI more than 35. The study started after seeking the approval of hospital research ethical committee. Written informed consent was taken from participants fulfilling the inclusion and exclusion criteria. The aims, nature and procedures of the study was fully explained to the potential study population. Newly diagnosed diabetes status confirmed by taking history, performing physical examination and medical records including HbA1c level. A 5 cc blood sample was taken from each participant using all the sterile measures by a trained phlebotomist and immediately sent to hospital laboratory for measuring and confirming serum HbA1c. Patient were asked to sit in a quite room for 5 minutes to relax the patient. Then blood pressure was checked on the arm by placing the diaphragm of stethoscope on brachial artery bifurcation site using manual sphygmomanometer for three times ad then the average blood pressure value was taken. Results was recorded in the proforma. Other demographic data such as patient's age, gender, weight, education, monthly income, rural or urban address were recorded in the proforma, Statistical software (IBM-SPSS.Version.23) was used for data analysis. Mean ±SD or median (IQR) was calculated for age, weight, height, HbA1c level and Blood pressure after checking normality by shapiro wilk test. Frequency and percentage were computed for quantitative variable like gender, smoking status and hypertension. Hypertension were stratified among age, gender, smoking status, HbA1c level, body mass index. Post stratification chi square or Fischer exact test was applied and P value of ≤0.05 considered statistically significant.

Results:

The study included 149 newly diagnosed type 2 diabetic patients aged 30 to 60 years. The frequency of hypertension among these patients was determined, along with an analysis of demographic and clinical characteristics. The results are presented below:

Table 1: Demographic and Clinical Characteristics of Study Participants

Variable	Category	Frequency (n=149)	Percentage (%)
Gender	Male	78	52.3%
	Female	71	47.7%
Age Group (Years)	30-40	45	30.2%
	41-50	62	41.6%
	51-60	42	28.2%
Residence	Urban	92	61.7%
	Rural	57	38.3%
Hypertension Status	Present (BP ≥140/90)	66	44.3%
	Absent (BP <140/90)	83	55.7%
Mean HbA1c (%)	-	7.8 ± 1.2	-
Mean BMI (kg/m²)	-	28.5± 3.4	-

Frequency of Hypertension, Among the 149 participants, **44.3**% (n=66) were found to have hypertension (BP ≥140/90 mmHg).

Gender Distribution, Males constituted 52.3% (n=78) of the study population, while females accounted for 47.7% (n=71).

Age Group Prevalence, The highest proportion of hypertensive patients fell in the 41-50 years age group (41.6%), followed by the 51-60 years (28.2%) and 30-40 years (30.2%) groups.

Residence, A majority of participants were from urban areas (61.7%), while 38.3% were from rural regions.

Clinical Parameters, The mean HbA1c level was 7.8 ± 1.2%, indicating poor glycemic control in the study population, The mean BMI was 28.5 ± 3.4 kg/m², suggesting a trend toward overweight/obesity.

Further analysis using the chi-square test revealed, A statistically significant association between hypertension and age (p=0.02), with older patients (51-60 years) showing a higher prevalence, No significant association was found between hypertension and gender (p=0.45) or residence (p=0.32).

Discussion:

The current study found that 44.3% (n=66) of the 149 participants had hypertension (BP ≥140/90 mmHg). These results differ from a London-based study, which reported a higher hypertension prevalence among women,[8] but align with findings from Southwest Ethiopia, where both studies identified a substantial hypertension burden among diabetic patients, with age (≥50 years) and BMI (≥25) as major contributing factors.[9] In contrast, our observed prevalence was lower than rates reported in Uganda (61.9%)[10] and another study (56.2%),[11] though they were consistent with research showing a 45.5% hypertension prevalence.[12] Discrepancies were noted with studies reporting higher frequencies (70.5%)[13] and those using a different hypertension threshold (BP >129/84 mmHg),[14] as well as findings indicating a much higher prevalence (92.7%).[15] Finally, while our study partially agreed with comparative research on the high prevalence of hypertension in diabetic patients, additional variations were evident.[16]

Conclusion:

The study concluded that among 149 newly diagnosed type 2 diabetic patients aged 30 to 60 years, the frequency of hypertension was 44.3%, with a higher prevalence observed in older age groups (51-60 years), as evidenced by a statistically significant association (p=0.02). No significant links were found between hypertension and gender or residence. The mean HbA1c level of 7.8% indicated poor glycemic control, while the mean BMI of 28.5 kg/m² suggested a trend toward overweight/obesity. These findings highlight the need for targeted interventions to manage hypertension and metabolic risk factors in diabetic patients, particularly in older individuals.

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