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Research Article

**PREVALENCE OF DYSLIPIDEMIA IN HYPERTENSIVE AND  
DIABETIC PATIENTS IN A TERTIARY HOSPITAL IN  
PAKISTAN**<sup>1</sup>Zulquernain Ahmed Zoak, <sup>2</sup>Tayyaba Naeem, <sup>3</sup>Ishfaq Ahmad, <sup>4</sup>Dr. Muhammad Aarsal,  
<sup>5</sup>Ali Hassan Rizvi, <sup>6</sup>Dr. Afaq Ahmad<sup>1</sup>PMC: 6286-AJK, Email: zoak786@icloud.com<sup>2</sup>PMC: 118876-P, Email: bianaem97@gmail.com<sup>3</sup>PMC: 35162-N, Email: Ishfaqafri32@gmail.com<sup>4</sup>PMC: 118651-P, Email: iamavish1000@gmail.com<sup>5</sup>PMC: 119021-P, Email: alihassanrizvi27@gmail.com<sup>6</sup>PMC: 35105-N, Email: afaqahmmad@gmail.com**Article Received:** September 2022    **Accepted:** October 2022    **Published:** November 2022**Abstract:**

**Background:** Hypertension and diabetes play a significant role in developing cardiovascular disorders. Meanwhile, dyslipidemia also plays a central role in the progression of atherosclerotic disease. The study aims to assess the association of dyslipidemia in diabetic and hypertensive patients, as this population is at a higher risk of ischaemic heart diseases.

**Materials and Methods:** A cross-sectional study was conducted at the Pathology department of a tertiary care hospital in Pakistan. Using the WHO calculator, a sample size of 130 (CI 8.6) was calculated. All the participants were above 18 years of age. The patients with a previous history of myocardial infarction, stroke, or type 1 diabetes, with fasting blood sugar of less than 126mg/dl and who did not give consent were excluded from the study. Fasting lipid profiles of all the participants were carried out. The study outcome was measured in terms of percentages of diabetic and hypertensive patients having dyslipidemia.

**Results:** The mean age of the patients was  $54.8 \pm 7.6$  years. Of 130 cases, 52.3% of participants had diabetes, whereas 47.7% had hypertension. Dyslipidemia was found in 73.1% of diabetic and 66.12% of hypertensive patients, and this association was significant ( $p$ -value  $< 0.001$ )

**Conclusion:** Dyslipidemia is directly associated with diabetes and hypertension. Thus strict monitoring of diabetic and hypertensive patients with dyslipidemia should be done to avoid developing cardiovascular disorders.

**Keywords:** Dyslipidemia, diabetes, hypertensive patients' prevalence, Pakistan

**Corresponding author:****Zulquernain Ahmed Zoak,**

PMC: 6286-AJK

Email: [zoak786@icloud.com](mailto:zoak786@icloud.com)

QR code



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**INTRODUCTION:**

Dyslipidemia is an abnormally high level of non-HDL cholesterol in the body. It has been observed that dyslipidemia is strongly associated with other metabolic diseases like hypertension and diabetes. In addition, these three diseases further contribute to the development of atherosclerotic heart diseases.<sup>1</sup>

The overall burden of atherosclerotic diseases is on the rise worldwide.<sup>2</sup> Controlling risk factors for cardiovascular diseases will eventually lead to decreased mortality. If one knows about the prevalence of dyslipidemia in hypertensive and diabetic patients, there would be lesser mortalities as better strategies could be designed to cope with the problem.<sup>3</sup>

Although studies have found an association between dyslipidemia, hypertension and diabetes mellitus, the data from the South Asian population from an epidemiological point of view is scant.<sup>3</sup> In this study, we have tried to determine the prevalence of dyslipidemia in Islamabad, Pakistan.

**MATERIALS AND METHODS:**

A cross-sectional study was conducted at the pathology department of a tertiary care hospital in Pakistan from February 2021 to June 2022. Using the WHO calculator, a sample size of 130 was calculated. Informed consent was taken from all the study participants after explaining the research. All the participants were either hypertensive or diabetic. The participants with a history of stroke or ischemic heart disease, type-I diabetes mellitus, smoking history, age less than 18 and those who did not give consent were excluded from the study. Blood samples were taken and analyzed in a chemistry analyzer for cholesterol measurements. Cholesterol measurements included LDL-C, TG, HDL-C and FFAs. The data was collected and analyzed for a chi-square test using IBM-SPSS version 25.

**RESULTS:**

The mean age of the participants was  $54.8 \pm 7.6$  years. The total numbers of diabetic and hypertensive patients are shown in the following table,

Table no. 1 Showing the Distribution of Diabetic and Hypertensive Participants

Disease Type	n=Number of participants	Percentage %
Diabetes Mellitus	68	52.3%
Hypertension	62	47.7%
Total	n=130	100%

Dyslipidemia was found prevalent in most diabetic cases, i.e. 73.1%. This is shown in the table,

Table no. 2 Showing Dyslipidemia in Diabetic Cases

Disease Type	n=number	Percentage	p-value
Diabetic Patients with dyslipidemia	50	73.52%	<0.001
Diabetic patients without dyslipidemia	18	26.48%	<0.001
Total diabetic patients	n=68	100%	<0.001

Similarly, dyslipidemia was also present in more than half of the hypertensive population. Around 66.12% of hypertensive patients had abnormal lipid measurements.

Table no. 3 Showing Dyslipidemia in Hypertensive Cases

Disease Type	n=number	Percentage	p-value
Hypertensive Patients with dyslipidemia	41	66.12%	<0.001
Hypertensive patients without dyslipidemia	21	33.88%	<0.001
Total Hypertensive patients	n=62	100%	<0.001

**DISCUSSION:**

Hypertension, diabetes and dyslipidemia or deranged lipid profile play a central role in the development of cardiovascular disorders.<sup>1</sup> This study aimed to find the prevalence of dyslipidemia in diabetic and hypertensive patients.

The mean age of participants in this study was  $54.8 \pm 7.6$  years. A study done by Sherpa *et al.* had almost the same age group, i.e. 48 years in their study.<sup>4</sup> The late onset could be due to the lifestyle of individuals.

In our study, we found out that 73.1% of diabetic patients had dyslipidemia. As per the study of Wang *et al.* (2016) and Taskinen and Boren (2015), the prevalence of diabetic patients with dyslipidemia falls between 30-60%.<sup>5,6</sup> Studies have also shown that people even with better control of circulating sugar are at risk of developing dyslipidemia.<sup>7</sup> So, this population should be given special attention as people with atherosclerotic diseases have more than one factor at play. In addition, Ginsberg and MacCallum (2009) concluded that the primary lipid abnormality usually found in diabetic dyslipidemic patients was increased levels of VLDL and IDL.<sup>7</sup> However, our study did not mainly focus on the type of lipid abnormality. This lipid abnormality in diabetic patients might be because Asians consume more fatty food than Westerners.

On the other hand, the prevalence of dyslipidemia in hypertensive patients came out to be 66.12%. This prevalence is alarming and should be paid special attention to. Dalal *et al.* (2012) found a lesser prevalence of 31%. This significant difference in the prevalence could be once again attributed to a sluggish lifestyle.<sup>3</sup> The research of Otsuka *et al.* (2016) labelled dyslipidemia a cause of hypertension instead of a consequence in the Japanese population. They argued that a deranged lipid profile plays two roles. First, they impair the endothelial cells' function, causing decreased nitric oxide production, and disrupting blood pressure regulation. Second, they reduce the sensitivity of baroreceptors.<sup>1,8</sup> It can be said that either hypertension is a cause or consequence, and this population should be routinely checked for dyslipidemia.

**CONCLUSION:**

The prevalence of dyslipidemia in diabetic and hypertensive patients is alarming in our population. Physical inactivity and a high-fat diet remained the main culprits of the high prevalence of metabolic disorders. A more comprehensive study should be done to enhance the scope of the metabolic disorders within the region.

**REFERENCES:**

1. Otsuka T, Takada H, Nishiyama Y, Kodani E, Saiki Y, Kato K *et al.* Dyslipidemia and the Risk of Developing Hypertension in a Working-Age Male Population. *J Am Heart Assoc* 2016; 5:3.
2. Boo S, Yoon YJ, Oh H. Evaluating the prevalence, awareness, and control of hypertension, diabetes, and dyslipidemia in Korea using the NHIS-NSC database. A cross-sectional analysis. *Medicine (Baltimore)* 2018; 97:51
3. Dalal JJ, Padmanabhan TNC, Jain P, Patil S, Vasawala H, Gulati A. LIPITENSION: Interplay between dyslipidemia and hypertension. *Indian J Endocrinol Metab.* 2012; 16: 240-245
4. Sherpa LY, Deji, Stigum H, Chongsuvivatwong V, Luobu O, Thelle DS *et al.* Lipid Profile and Its Association with Risk Factors for Coronary Heart Disease in the Highlanders of Lhasa, Tibet. *High Altitude Med & Biol* 2011; 12: 57-63
5. Taskinen M.R., Boren J. New insights into the pathophysiology of dyslipidemia in type 2 diabetes. *Atherosclerosis.* 2015; 239:483-95
6. Low Wang C.C., *et al.* Clinical Update: Cardiovascular Disease in Diabetes Mellitus: Atherosclerotic Cardiovascular Disease and Heart Failure in Type 2 Diabetes Mellitus - Mechanisms, Management, and Clinical Considerations. *Circulation.* 2016;133:2459-502
7. Ginsberg H.N., MacCallum P.R. The obesity, metabolic syndrome, and type 2 diabetes mellitus pandemic: Part I. Increased cardiovascular disease risk and the importance of atherogenic dyslipidemia in persons with the metabolic syndrome and type two diabetes mellitus. *J Cardiometab Syndr.* 2009; 4: 113-9
8. Piccirillo G, Di Giuseppe V, Nocco M, Lionetti M, Moise A, Naso C, Tallarico D, Marigliano V, Cacciafiesta M. Influence of ageing and other cardiovascular risk factors on baroreflex sensitivity. *J Am Geriatr Soc.* 2001; 49: 1059-1065