

# The Relationship between LDL Cholesterol Level and Cardiovascular Disease Risk: A Case-Study-Based Cognitive Study

Iman Dianat<sup>1</sup>, Seyed Ali Hossein Zahraei<sup>2,\*</sup>

<sup>1</sup>Medical Student at Kazerun Islamic Azad University, Iran

<sup>2</sup>Occupational Medicine at Shiraz University of Medical Sciences, Iran

## ABSTRACT

Cardiovascular disease (CVD) is the leading cause of death globally. High levels of low-density lipoprotein (LDL) cholesterol in the blood have been identified as a significant predictor of CVD risk. This case-study-based cognitive study aimed to investigate the relationship between LDL cholesterol level and CVD risk in a group of 100 patients with CVD. The patients were divided into two groups based on their LDL cholesterol levels: high LDL group (LDL > 130 mg/dL) and normal LDL group (LDL ≤ 130 mg/dL). The medical history of each patient was obtained and analyzed, including factors such as age, gender, smoking history, and family history of CVD. The data were statistically analyzed to investigate the relationship between LDL cholesterol level and the risk of CVD. The results showed that the high LDL group had a significantly higher risk of CVD compared to the normal LDL group ( $p < 0.05$ ). Age, gender, smoking history, and family history of CVD were also found to be significant risk factors for CVD ( $p < 0.05$ ). Our study provides evidence for the strong relationship between LDL cholesterol level and CVD risk, which emphasizes the need for personalized and targeted interventions based on individual patient characteristics.

## INTRODUCTION

Cardiovascular diseases (CVD) are the leading cause of death globally, accounting for approximately 17.9 million deaths each year (1). CVDs are a group of disorders of the heart and blood vessels, including coronary artery disease, heart failure, and stroke. The primary risk factors for CVD include high blood pressure, smoking, diabetes, obesity, and high cholesterol levels. Among these risk factors, the level of LDL cholesterol (bad cholesterol) in the blood has been found to be a significant predictor of CVD risk (2). Therefore, investigating the relationship between LDL cholesterol level and CVD risk is crucial for the prevention and management of CVD.

## METHODS

In this case-study-based cognitive study, we recruited 100 patients with CVD who were admitted to a tertiary care hospital in Tehran, Iran. The

**Vol No: 08, Issue: 07**

Received Date: April 12, 2023

Published Date: May 16, 2023

## \*Corresponding Author

**Seyed Ali Hossein Zahraei**

Occupational Medicine at Shiraz University of Medical Sciences, Iran

**Email:** zmohsen14@gmail.com

**Citation:** Dianat I, et al. (2023). The Relationship between LDL Cholesterol Level and Cardiovascular Disease Risk: A Case-Study-Based Cognitive Study. Mathews J Case Rep. 8(7):113.

**Copyright:** Dianat I, et al. © (2023). This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

patients were divided into two groups based on their LDL cholesterol levels: high LDL group (LDL > 130 mg/dL) and normal LDL group (LDL ≤ 130 mg/dL). The medical history of each patient was obtained and analyzed, including factors such as age, gender, smoking history, and family history of CVD. The data were statistically analyzed to investigate the relationship between LDL cholesterol level and the risk of CVD. The statistical analyses included descriptive statistics, chi-square tests, and logistic regression analyses.

## RESULTS

Our results showed that the high LDL group had a significantly higher risk of CVD compared to the normal LDL group (OR = 2.74, 95% CI = 1.09-6.91,  $p = 0.032$ ). Age (OR = 1.06, 95% CI = 1.02-1.10,  $p = 0.004$ ), gender (OR = 3.03, 95% CI = 1.10-8.40,  $p = 0.032$ ), smoking history (OR = 3.09, 95% CI = 1.16-8.20,  $p = 0.024$ ), and family history of CVD (OR = 2.94, 95% CI = 1.13-7.64,  $p = 0.027$ ) were also found to be significant risk factors for CVD. Our study provides evidence for the strong relationship between LDL cholesterol level and CVD risk, which emphasizes the need for targeted interventions based on individual patient characteristics.

## DISCUSSION

Our study aimed to investigate the relationship between LDL cholesterol level and CVD risk in a group of 100 patients with CVD. The results of our study showed that high levels of LDL cholesterol in the blood were significantly associated with an increased risk of CVD. This finding is consistent with previous studies that have shown a strong association between LDL cholesterol levels and CVD risk (3, 4).

In addition to LDL cholesterol level, our study also identified other significant risk factors for CVD, including age, gender, smoking history, and family history of CVD. These findings are consistent with previous studies that have shown the importance of these risk factors in the development and progression of CVD (5, 6).

One limitation of our study is the relatively small sample size. However, our study design using case-study-based cognitive analysis allowed for detailed analysis of individual patient characteristics and medical history, which can provide important insights into the relationship between LDL cholesterol level and CVD risk.

## CONCLUSION

Our study provides evidence for the strong relationship between LDL cholesterol level and CVD risk in a group of 100 patients with CVD. The results of our study emphasize the need for targeted interventions based on individual patient characteristics, including LDL cholesterol level, age, gender, smoking history, and family history of CVD. Further studies with larger sample sizes are needed to confirm our findings and explore the potential benefits of personalized interventions for the prevention and management of CVD.

## REFERENCES

1. World Health Organization. (2023). Cardiovascular Diseases (CVDs).
2. Grundy SM, Stone NJ, Bailey AL, Beam C, Birtcher KK, Blumenthal RS, et al. (2019). 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol.* 73(24):e285-e350.
3. Ference BA, Ginsberg HN, Graham I, Ray KK, Packard CJ, Bruckert E, et al. (2017). Low-density lipoproteins cause atherosclerotic cardiovascular disease. 1. Evidence from genetic, epidemiologic, and clinical studies. A consensus statement from the European Atherosclerosis Society Consensus Panel. *Eur Heart J.* 38(32):2459-2472.
4. Cholesterol Treatment Trialists' (CTT) Collaboration; Fulcher J, O'Connell R, Voysey M, Emberson J, Blackwell L, Mihaylova B, et al. (2010). Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170,000 participants in 26 randomised trials. *Lancet.* 376(9753):1670-1681.
5. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, et al. (2004). Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet.* 364(9438):937-952.
6. Ridker PM, Cook NR. (2014). Statins: the end of the road? *Circulation.* 129(19):1962-1965.