Journal of Clinical and Diagnostic Medicine Africa
Vol. 1 No. 1 (2026): August 2026 Issue
https://doi.org/10.51168/9a21aa92
Original Study

Dyslipidemia among hypertensive patients aged 45-75 years attending Mubende Regional Referral Hospital in Mubende district. A cross-sectional study.

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Abstract

Background

Hypertension and dyslipidemia significantly contribute to cardiovascular diseases, which continue to account for the highest number of deaths worldwide. The study aims to assess the prevalence and factors contributing to dyslipidemia among hypertensive patients aged 45-75 years attending the hypertension clinic at Mubende Regional Referral Hospital.

Methodology

A retrospective cross-sectional descriptive design was used in this study. The design involved reviewing existing laboratory records to determine the prevalence of dyslipidemia and assess the contributing factors among hypertensive patients aged 45-75 years using existing laboratory records from October 2025 to March 2026 at a single point in time.

Results

Females constituted 56.2% of the reviewed medical records, and males accounted for 43.8%. The majority of hypertensive patients resided in urban areas (57.6%), and 42.4% were from rural areas. 186 (48.4%) were found to have dyslipidemia. This indicates that nearly half of the hypertensive patients attending the clinic had at least one abnormal lipid parameter. 72 hypertensive patients with dyslipidemia (38.7%) had elevated total cholesterol; 114 patients (61.3%) did not have elevated total cholesterol. Low HDL-C was the most common lipid abnormality among hypertensive patients with dyslipidemia, affecting 96 patients (51.6%), while 48.4% had normal HDL-C levels. Elevated triglycerides were observed in 64 patients (34.4%), and 122 (65.6%) had normal triglyceride levels. Age group and place of residence showed a statistically significant association with dyslipidemia ($p < 0.05$).

Conclusion

Dyslipidemia is common, affecting 48.4% of hypertensive patients in this age group. The most common lipid abnormalities were low HDL-C and high LDL-C. Dyslipidemia was significantly associated with age group and place of residence. Hypertensive patients aged 45–75 years are at high risk of lipid abnormalities and cardiovascular complications.

Recommendation

Routine lipid profile testing should be included in the care of hypertensive patients, especially those aged 45–75 years.

Keywords: *Dyslipidemia, hypertensive patients, Hypertension clinic, Mubende Regional Referral Hospital.*
Submitted: June 30, 2026 **Accepted:** July 11, 2026 **Published:** August 11, 2026

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Background

Hypertension and dyslipidemia significantly contribute to cardiovascular diseases (CVDs), which continue to account for the highest number of deaths worldwide. Cardiovascular diseases account for approximately 17.9 million deaths annually, representing nearly one-third of all deaths worldwide (World Health Organisation. (WHO, 2023). Dyslipidemia refers to abnormal lipid concentrations in the blood, characterised by elevated cholesterol, LDL-C, triglycerides, or decreased HDL-C levels. These abnormalities increase the risk of cardiovascular diseases such as heart attack and stroke. Globally, dyslipidemia commonly coexists with hypertension due to shared metabolic and lifestyle-related risk factors. (Noubiap *et al*., 2018).

Older adults, especially those aged 45-75 years, are more likely to develop dyslipidemia due to reduced physical activity, metabolic changes, and other body changes associated with ageing (Risk Factor Collaboration. (NCD-RisC, 2021).

The risk of cardiovascular complications rises with advancing age, particularly among individuals who have had hypertension and abnormal lipid levels for a long period. (Mensah *et al*., 2019). When hypertension occurs together

with dyslipidemia, the risk of complications such as stroke and heart attack becomes higher. (Roth *et al*., 2020). Consequently, regular lipid profile assessment among hypertensive individuals is essential for early detection and prevention of cardiovascular complications.

Across many African countries, rapid urbanisation, unhealthy dietary patterns, physical inactivity, and rising cases of obesity have contributed to the growing burden of dyslipidemia. (Noubiap *et al*., 2018). Evidence from Togo demonstrated dyslipidemia prevalence of over 50% among hypertensive adults, with older age groups showing higher prevalence than younger adults. (Amoussou-Guenou *et al*., 2020). In Nigeria, reduced HDL-C and elevated LDL-C were the most frequent abnormalities among hypertensive patients, emphasising the need for routine lipid monitoring in hypertension care. (Onyegbutulem *et al*., 2021).

In East Africa, dyslipidemia among older adults with hypertension has increasingly been reported. A population-based study conducted in southern Uganda and north-western Tanzania found substantial dyslipidemia burden, particularly among overweight individuals and urban populations exposed to lifestyle transitions. (Katamba *et al*., 2019). Comparable findings demonstrated dyslipidemia and increased cardiovascular risk among urban populations in Uganda and Tanzania. (Kavishe *et al*., 2019). Similarly, determinants such as obesity, sedentary lifestyle, and metabolic disorders have been associated with increasing dyslipidemia prevalence across African populations. (Obsa *et al*., 2022). The study aims to assess the prevalence and factors contributing to dyslipidemia among hypertensive patients aged 45-75 years attending the hypertension clinic at Mubende Regional Referral Hospital.

Specific Objectives

To determine the prevalence of dyslipidemia among hypertensive patients aged 45-75 years attending Mubende Regional Referral Hospital.

To identify socio-demographic factors associated with dyslipidemia in the study population among hypertensive patients aged 45-75 years attending Mubende Regional Referral Hospital.

METHODOLOGY.

Study design.

A retrospective cross-sectional descriptive design was used in this study. The design involved reviewing existing laboratory records to determine the prevalence of dyslipidemia and assess the contributing factors among hypertensive patients aged 45-75 years using existing laboratory records from October 2025 to March 2026 at a single point in time.

Study area.

The study was conducted at Mubende Regional Referral Hospital (MRRH), Mubende District, Central Uganda. The hospital served as a referral center for Mubende and neighboring districts such as Mityana, Kyegegwa, and Kassanda. It offered a variety of specialized services, including a Hypertension and Diabetic Clinic, which operated weekly and managed a large number of patients with chronic conditions. For this study, the hypertension clinic at MRRH will serve as the primary study area. The clinic provided access to an appropriate population of hypertensive patients and was supported by functional laboratory facilities capable of performing lipid profile testing. The availability of these services made MRRH, and specifically its hypertension clinic, an ideal setting for the study.

Study Population

The target population comprised medical records of hypertensive patients aged 45-75 years who underwent lipid profile testing at Mubende Regional Referral Hospital between October 2025 and March 2026. The records were obtained from hospital laboratory registers and patients' files. This population includes patients diagnosed with hypertension who were assessed for lipid abnormalities as part of routine clinical care during the specified period. Only records with complete information on lipid profile parameters and relevant demographic characteristics were considered.

Sample Size Determination

The sample size was calculated using the Kish-Leslie formula (1965) for cross-sectional studies as the expression below,

$$n = \frac{Z^2PQ}{d^2}$$

Where:

n = required sample size

Z= 95% confidence interval (1.96)

P = estimated prevalence of dyslipidemia among hypertensive patients (from previous studies of Ocen et al 2020, the appropriate prevalence is 48.3%)

d = margin of error (0.05)

Substituting the formula above,

$$n = \frac{(1.96)^2 \times (0.483) \times (1 - 0.483)}{(0.05)^2}$$

n=383.96

n=384

And therefore, the sample size was 384 hypertensive patients aged 45 to 75 years, and the sample was obtained from laboratory records of hypertensive patients seen between October and March 2026

https://doi.org/10.51168/9a21aa92

Sampling Technique

Convenience sampling was applied to select eligible records, whereby all eligible medical records of hypertensive patients aged 45–75 years who underwent lipid profile testing at Mubende Regional Referral Hospital between October 2025 and March 2026 were selected consecutively from laboratory registers and patient files until the required sample size was achieved. This method was appropriate because it used all available and complete records within the study period, making it practical, time-efficient, and cost-effective for retrospective data collection.

Sampling Procedure

The sampling procedure involved several systematic steps. First, permission was obtained from the administration of Mubende Regional Referral Hospital to access laboratory registers and patient files. Next, all records of hypertensive patients aged 45–75 years who underwent lipid profile testing between October 2025 and March 2026 were identified from the laboratory registers. These records were then screened using the inclusion and exclusion criteria to determine eligibility. Records with incomplete or missing key information were excluded. All eligible records were consecutively selected and assigned unique identification codes to ensure confidentiality. Data were then extracted using a structured data extraction checklist until the required sample size was reached.

Data Collection Method

Secondary data were obtained through review of laboratory and patient records covering the period October 2025 to March 2026 using a structured data extraction checklist.

Data Collection Tool(s)

A pre-tested structured data extraction checklist developed by the researcher based on the study objectives and literature was used to collect secondary data from patient medical and laboratory records at Mubende Regional Referral Hospital. The tool captured socio-demographic characteristics, clinical information, and lipid profile parameters to determine the prevalence of dyslipidemia and its associated factors. It used closed-ended and pre-coded variables to ensure consistency and ease of analysis. The checklist was pre-tested on a small sample of records from a similar facility to improve validity and reliability before actual data collection.

Data Collection Procedure

Data collection began after obtaining ethical approval and administrative permission from Mubende Regional Referral Hospital. The researcher accessed laboratory registers and patient files to identify medical records of hypertensive patients aged 45–75 years who underwent lipid profile testing between October 2025 and March 2026. The identified records were screened using the study's inclusion and exclusion criteria, and only complete records were included. Relevant information such as demographic characteristics and lipid profile results was extracted using a structured data extraction checklist. Each eligible record was assigned a unique identification code to ensure confidentiality, and the extracted data were carefully checked for completeness and consistency before analysis.

Study Variables

Dependent Variable.

Dyslipidemia among hypertensive patients was determined from lipid profile results obtained from medical records at Mubende Regional Referral Hospital. It was measured as a categorical variable (present or absent) based on standard clinical cut-off values for total cholesterol, LDL, HDL, and triglycerides.

Independent Variables.

Socio-demographic factors, specifically Age, sex, marital status, educational level, occupation, and income.

Quality control

The data extraction tool was piloted on 10% of records of the calculated sample at a nearby health facility that is not part of the study. Pretesting will identify ambiguous questions and logistical issues; the tool was revised accordingly before the main study.

All research assistants will undergo training covering the study objectives, data collection procedures, ethics and consent procedures. This training included role-plays and practical sessions.

Inclusion criteria: The study included records of hypertensive patients who meet specific eligibility requirements to ensure that the sample is appropriate for addressing the research objectives. Records of hypertension fell within the age range of 45-75 years. Only records with complete lipid profile results dated between October 2025 and March 2026 at Mubende Regional Referral Hospital during the study period were considered. These criteria ensured that the records were homogeneous and relevant to the research questions.

Exclusion criteria

This excluded records outside October 2025 and March 2026, which do not meet the eligibility standards to maintain accuracy and consistency in the findings. Records without hypertensive results, as well as hypertensive records below 45 years or above 75 years, were not considered for participation. The study also excluded records with missing key variables, which are unable to provide reliable information, as well as duplicate results. These exclusion measures helped prevent confounding factors and ensured the reliability of the study results.

https://doi.org/10.51168/9a21aa92

Data Analysis and Presentation

Data were entered into Statistical Package for Social Sciences (SPSS) version 26.0 for analysis. Descriptive statistics such as frequencies, means, and percentages were used to summarize data. The prevalence of dyslipidemia was calculated as the proportion of hypertensive patients with abnormal lipid levels. Bivariate analysis (Chi-square tests) was used to assess associations between dyslipidemia and independent variables, while multivariate logistic regression was used to identify factors independently associated with dyslipidemia. A p-value < 0.05 was considered statistically significant. Results were presented in tables and narrative form for clarity.

Ethical Consideration

Before commencing the study, an introductory letter was obtained from Mildmay Institute of Health Sciences and was presented to the Mubende Regional Referral Hospital Research and Ethics Committee for approval. Permission to conduct the study was sought from the administration of Mubende Regional Referral Hospital and the hypertension clinic in charge.

Since the study used secondary data from medical records, a waiver of informed consent was requested from the Ethics Committee. Confidentiality was strictly maintained by using codes instead of patient identifiers, and no personal patient names were recorded. Data were used strictly for academic purposes, and access was limited only to the researcher

Results

Socio-Demographic Characteristics

Table1: Age Group Distribution of Hypertensive Patients Based on Reviewed Medical Records (n = 384).

Age group (years)	Frequency (f)	Percentage (%)
45–54	146	38.0
55–64	134	34.9
65–75	104	27.1

Table 1 shows that the majority of hypertensive patients whose medical records were reviewed were aged between 45–54 years (38.0%). Patients aged 55–64 years constituted 34.9%, while those aged 65–75 years were the least represented at 27.1%.

Table 2: Sex Distribution of Hypertensive Patients Based on Reviewed Medical Records (n = 384).

Sex	Frequency (f)	Percentage (%)
Male	168	43.8
Female	216	56.2

Table 2 shows that females constituted more than half of the reviewed medical records (56.2%), whereas males accounted for 43.8% of the hypertensive patients attending the clinic.

Table 3: Residence Distribution of Hypertensive Patients Based on Reviewed Medical Records (n = 384).

Residence	Frequency (f)	Percentage (%)
Urban	221	57.6
Rural	163	42.4

Table 3 indicates that the majority of hypertensive patients resided in urban areas (57.6%), while 42.4% were from rural areas.

https://doi.org/10.51168/9a21aa92

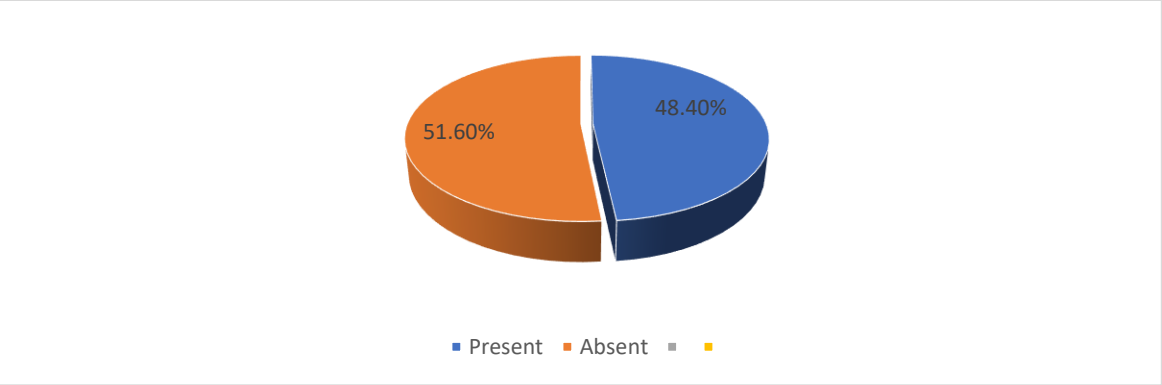
Table 4: Education Level of Hypertensive Patients Based on Reviewed Medical Records (n = 384).

Education level	Frequency (f)	Percentage (%)
No formal education	96	25.0
Primary	96	47.4
Secondary and above	106	27.6

Findings indicated that nearly half of the hypertensive patients had attained primary level education (47.4%). Patients with secondary education and above accounted for 27.6%, while 25.0% had no formal education.

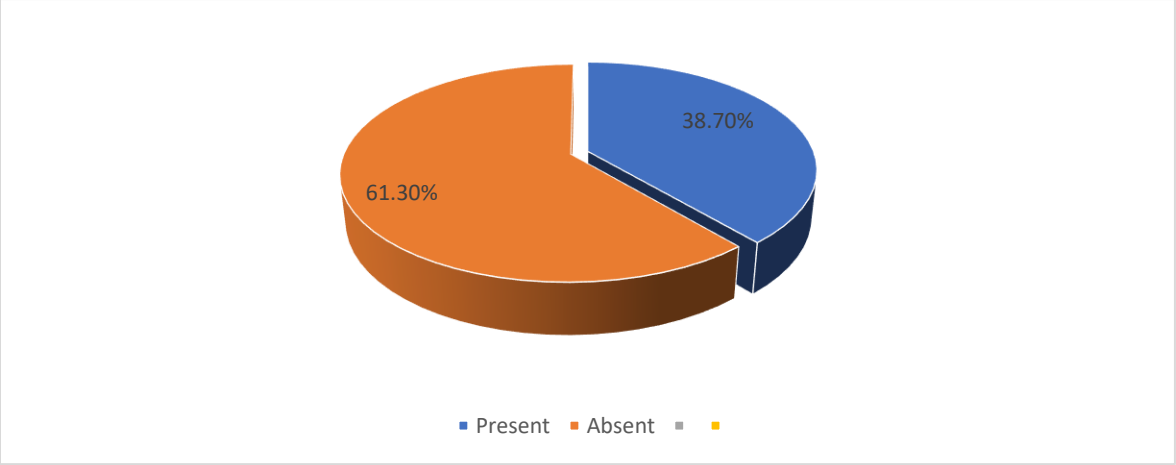
Prevalence of Dyslipidemia among Hypertensive Patients aged 45-75 years attending the Hypertension Clinic at Mubende Regional Referral Hospital in Mubende District.

Figure 1: Prevalence of Dyslipidemia among Hypertensive Patients Based on Reviewed Medical Records.



Review of 384 medical records revealed that 186 patients (48.4%) had dyslipidemia, 186 (48.4%) were found to have dyslipidemia. This indicates that nearly half of the hypertensive patients attending the clinic had at least one abnormal lipid parameter.

Figure 2: Distribution of Elevated Total Cholesterol among Hypertensive Patients with Dyslipidemia.



72 hypertensive patients with dyslipidemia (38.7%) had elevated total cholesterol, while the majority, 114 patients (61.3%), did not have elevated total cholesterol

Table 5: Distribution of Low HDL-C among Hypertensive Patients with Dyslipidemia (n = 186).

Low HDL-C	Frequency (f)	Percentage (%)
Present	96	51.6
Absent	90	48.4

According to the findings, low HDL-C was the most common lipid abnormality among hypertensive patients with dyslipidemia, affecting 96 patients (51.6%), while 48.4% had normal HDL-C levels.

Table 6: Distribution of Elevated Triglycerides among Hypertensive Patients with Dyslipidemia (n = 186).

Elevated Triglycerides	Frequency (f)	Percentage (%)
Present	64	34.4
Absent	122	65.6

Results revealed that elevated triglycerides were observed in 64 patients (34.4%), while the majority of patients, 122 (65.6%), had normal triglyceride levels.

Association between Socio-Demographic Factors and Dyslipidemia among Hypertensive Patients aged 45-75 years attending Hypertension Clinic at Mubende Regional Referral Hospital in Mubende District.

Table 7: Association between socio-demographic factors and dyslipidemia among hypertensive patients aged 45–75 years based on reviewed medical records at Mubende Regional Referral Hospital, Mubende District.

Variable	χ^2 value	p-value	Interpretation
Age group	9.82	0.007	Significant
Sex	1.36	0.243	Not significant
Residence	6.14	0.013	Significant
Education level	2.08	0.353	Not significant

Age group and place of residence showed a statistically significant association with dyslipidemia ($p < 0.05$). Sex and education level were not statistically significantly associated with dyslipidemia.

Discussion

Prevalence of Dyslipidemia among Hypertensive Patients Aged 45–75 Years.

The prevalence of dyslipidemia among hypertensive patients aged 45–75 years attending Mubende Regional Referral Hospital was 48.4%. This indicates that almost half of the hypertensive patients had at least one abnormal lipid parameter, placing them at increased risk of cardiovascular complications such as stroke and myocardial infarction.

This finding is consistent with studies conducted in Uganda, particularly at Lira Regional Referral Hospital, which reported a prevalence of 48.3% (Ocen *et al*., 2020). The similarity suggests that dyslipidemia among hypertensive patients is a persistent problem in Ugandan referral hospitals, likely due to inadequate routine lipid screening and increasing lifestyle-related risk factors.

Comparable findings in Ethiopia and Togo also reported prevalence levels above 45% among hypertensive patients. (Gudina *et al*., 2019; Amoussou-Guenou et al., 2020). This supports the evidence that dyslipidemia is highly prevalent in sub-Saharan Africa due to urbanization, dietary changes, and physical inactivity.

Pattern of Lipid Abnormalities.

The study found that low HDL-C (51.6%) was the most common lipid abnormality, followed by elevated LDL-C (43.5%), high total cholesterol (38.7%), and elevated triglycerides (34.4%).

This pattern indicates that atheroprotective lipids (HDL-C) are most affected among hypertensive patients in this population. Low HDL-C increases the risk of atherosclerosis because it reduces cholesterol clearance from blood vessels.

These findings are consistent with studies from Uganda and Iran, which also reported low HDL-C as the most common lipid abnormality among hypertensive patients. (Ocen *et al*., 2020; Yazdanpanah *et al*., 2021). This suggests a common metabolic pattern among hypertensive patients in low- and middle-income countries, likely linked to sedentary lifestyle and unhealthy dietary habits.

Socio-Demographic Factors Associated with Dyslipidemia.

The study found that age and place of residence were significantly associated with dyslipidemia, while sex and education level were not significantly associated.

Older patients were more likely to have dyslipidemia compared to younger ones. This is consistent with literature showing that lipid metabolism worsens with increasing age due to physiological changes and cumulative exposure to risk factors. (NCD-RisC, 2021).

Patients from urban areas were also more likely to have dyslipidemia compared to rural residents. This aligns with studies in East Africa showing that urbanisation increases exposure to sedentary lifestyles and unhealthy diets, contributing to lipid abnormalities. (Katamba *et al*., 2019).

The lack of association with sex and education level may suggest that biological and environmental factors play a stronger role than socio-educational status in this population.

Conclusion

Dyslipidemia is common, affecting 48.4% of hypertensive patients in this age group. The most common lipid abnormalities were low HDL-C and high LDL-C. Dyslipidemia was significantly associated with age group and place of residence. Hypertensive patients aged 45–75 years are at high risk of lipid abnormalities and cardiovascular complications.

Recommendations

Routine lipid profile testing should be included in the care of hypertensive patients, especially those aged 45–75 years.

Health workers should strengthen health education on proper diet, regular exercise, and weight control.

National guidelines for hypertension management should emphasise screening for dyslipidemia.

Support hospitals with laboratory equipment and reagents for lipid testing.

Hypertensive patients should be encouraged to adopt healthy lifestyle practices such as regular physical activity and a balanced diet.

Acknowledgment

I take this opportunity to thank my family for their unending support rendered to me during my studies. My sincere appreciation also goes to my academic supervisor, Mr Wasswa Amos, for his guidance, encouragement, and support toward this study.

I am greatly indebted to the entire management of Mubende Regional Referral Hospital because of their contribution in the form of advice and support towards this work.

Last but not least, to my classmates, you were great, and I will always cherish the moments we shared in our struggle and the contribution of the people not specifically mentioned here but are equally appreciated.

List of abbreviations

HDL-C: High-Density Lipoprotein Cholesterol.
LDL-C: Low-Density Lipoprotein Cholesterol.
WHO: World Health Organisation.
MRRH: Mubende Regional Referral Hospital.

Source of funding

The study was not funded.

Conflict of interest

The author did not declare any conflict of interest.

Data availability

Data available upon request

Author contribution

Bigirwamukama Derrick collected data and drafted the manuscript of the study.
Anthony Ssekitoleko supervised the study
Francisco Semuwemba supervised the study
Hasifa Nansereko supervised the study
Jane Frank Nalubega supervised the study

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