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Real-World Utilization Pattern, Safety and Effectiveness of Rosuvastatin (Roshal™) in Patients with Dyslipidemia in Ghana: Results from the PEARL Prospective Observational Study

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Abstract

Background: Dyslipidemia is a major modifiable cardiovascular risk factor and contributes significantly to the burden of cardiovascular disease globally and in sub-Saharan Africa. Data regarding real-world effectiveness and safety of statin therapy among Ghanaian patients remain limited. **Methods:** This prospective observational study enrolled 419 adult patients with dyslipidemia receiving rosuvastatin (Roshal™) therapy in Ghana. Patients were followed for 24 weeks. Lipid parameters, treatment adherence, dosage patterns, adverse events, and physician global assessment of treatment efficacy and safety were evaluated. Changes in lipid parameters from baseline to follow-up visits were analyzed using paired t-tests. **Results:** The mean age of participants was 53.97 ± 13.41 years, and females constituted 59.6% of the cohort. Poor dietary habits (61.3%) and physical inactivity (42.2%) were the most common cardiovascular risk factors. Hypertension was the commonest comorbidity (61.1%), followed by diabetes mellitus (22.9%). Rosuvastatin (Roshal™) therapy resulted in significant reductions in lipid parameters over time. Mean LDL-C decreased from 4.14 ± 0.86 mmol/L at baseline to 3.07 ± 0.77 mmol/L at visit 2, representing a 25.85% reduction ($p < 0.001$). Total cholesterol decreased from 6.51 ± 0.97 mmol/L to 4.89 ± 0.94 mmol/L, representing a 24.88% reduction ($p < 0.001$). Triglyceride levels reduced by 23.12% from baseline to visit 2 ($p < 0.001$). HDL-C increased modestly from 1.59 ± 0.62 mmol/L to 1.69 ± 0.76 mmol/L (6.28% increase; $p < 0.001$). Reductions in systolic blood pressure, diastolic blood pressure, and body weight were also observed during follow-up. The 10 mg dose showed the largest proportional LDL-C reduction, while

the 20 mg dose showed the largest total cholesterol reduction; these differences likely reflect baseline lipid levels rather than a true dose-response relationship. Adverse events were infrequent and mild, with palpitations, nausea, and headache reported in a small number of participants. **Conclusion:** Rosuvastatin therapy (Roshal™) was effective and well tolerated among Ghanaian patients with dyslipidemia, producing significant improvements in lipid parameters and cardiovascular risk indicators. These findings support the role of rosuvastatin as an effective therapeutic option for dyslipidemia management in routine clinical practice in Ghana.

Keywords

Dyslipidemia, Rosuvastatin, LDL Cholesterol, Ghana, Statin Therapy, Cardiovascular Risk

1. Introduction

Cardiovascular disease remains the leading cause of global mortality, accounting for approximately 30% of all fatalities worldwide [1]. Dyslipidemia, defined as a constellation of abnormalities in plasma lipids—including elevated total cholesterol, elevated low-density lipoprotein cholesterol, elevated triglycerides, and reduced high-density lipoprotein cholesterol—has been firmly established as one of the most important modifiable risk factors for atherosclerotic CVD [2]. The burden of lipid disorders is no longer confined to high-income nations; epidemiological transitions driven by urbanization, sedentary lifestyles, and dietary shifts have accelerated the prevalence of dyslipidemia across sub-Saharan Africa [3].

The clinical consequences of dyslipidemia are profound [4]. Elevated blood cholesterol is implicated in roughly one-third of ischemic heart disease cases and one-fifth of all strokes globally, with morbidity and mortality showing a positive correlation to LDL-C levels and an inverse correlation to HDL-C levels [2]. In Ghana, the situation mirrors this global trend. A meta-analysis encompassing 16 studies and 58,912 participants reported a pooled CVD prevalence of 10.34% in the general population, with significant age- and sex-related disparities [5]. Local investigations have documented particularly high rates of lipid abnormalities—60% of adults in Kumasi presented with elevated TC, 32% with elevated TG, 17% with low HDL, and 61% with elevated LDL [6]. Among diabetics in urban Ghana, the picture is even more concerning: 45% have TC above 5.2 mmol/L and 72.4% exhibit elevated LDL-C [7]. These findings underscore an urgent need for proactive screening, detection, and management of lipid disorders within Ghanaian healthcare systems.

Statins—3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors—constitute the cornerstone of pharmacological lipid management. Decades of randomized controlled trial evidence have unequivocally demonstrated that lowering LDL-C with statins reduces cardiovascular deaths and events [8]. However, statins

vary considerably in their potency, lipophilicity, and pharmacokinetic profiles. Among available agents, rosuvastatin—a newer-generation HMG-CoA reductase inhibitor—exhibits the greatest LDL-C-lowering capacity at commonly prescribed doses, produces the lowest extrahepatic tissue penetration, and carries minimal risk of CYP3A4-mediated drug interactions [9]. At clinical doses of 10 - 40 mg/day, rosuvastatin has been shown to achieve a 46% - 55% reduction in LDL-C. Real-world effectiveness studies corroborate trial findings, demonstrating that rosuvastatin users achieve superior LDL-C reduction and goal attainment compared with users of other statins [10]-[12].

Despite the global robustness of evidence supporting rosuvastatin, a critical knowledge gap persists in Ghana. Real-world clinical data on the usage pattern, safety, and effectiveness of rosuvastatin among dyslipidemia patients in routine Ghanaian practice remain scarce. Furthermore, adherence to statin therapy in low- and middle-income countries is often suboptimal—an average adherence rate of 58% has been reported in resource-limited settings—with poor knowledge, negative perceptions, costs, and side-effects identified as common barriers [8] [13]. The PEARL study was therefore designed to address this gap by evaluating rosuvastatin's utilization, effectiveness across doses, adherence, and safety profile in a real-world Ghanaian cohort.

2. Methods

2.1. Study Design and Setting

The PEARL study was designed as a non-interventional, multicentric, prospective observational study conducted in accordance with routine clinical practice at multiple healthcare facilities across Ghana. As a non-interventional study, no investigational procedures were imposed on participants; all clinical decisions—including the choice of rosuvastatin dose, follow-up schedule, and concomitant therapies—were made by the treating physicians per their usual practice. The data-collection period encompassed three scheduled study visits: a baseline visit, at 3 months ± 7 days (visit 1) and at 6 months ± 7 days (visit 2).

2.2. Study Population

The target population comprised adult patients with dyslipidemia who were clinically suitable for rosuvastatin (Roshal™) prescription in the real-world Ghanaian setting.

2.3. Inclusion Criteria

1) Female or male patients aged 18 years or above.

2) Patients with documented dyslipidemia who were clinically suitable for the prescription of rosuvastatin according to the locally approved prescribing information.

3) Patients willing to provide informed consent for the use of their personal and health data prior to study entry.

2.4. Exclusion Criteria

1) Presence of any contraindication to rosuvastatin as specified in the locally approved prescribing information.

2) History of statin-induced myopathy or serious hypersensitivity reaction to any HMG-CoA reductase inhibitor, including rosuvastatin.

3) Any medical or non-medical condition that, in the opinion of the treating physician, could prevent the patient's participation in the study.

4) Pregnant or lactating women, and women of childbearing potential unwilling to use an effective barrier contraceptive method for the duration of the study.

2.5. Sample Size

The study initially planned to enroll 720 patients; however, 419 patients completed the study per protocol.

2.6. Demographic and Clinical Data

At the baseline visit, demographic data were captured, including age, sex, duration of dyslipidemia (categorized as newly diagnosed, 6 months - 1 year, 1 - 3 years, or >3 years), and family history of dyslipidemia. Comorbid conditions of interest—diabetes mellitus, hypertension, obesity, and coronary artery disease—were documented. Behavioural risk factors including tobacco use, physical inactivity, alcohol consumption, and poor dietary habits were also recorded.

2.7. Anthropometric and Vital Sign Measurements

Body weight, systolic blood pressure, and diastolic blood pressure were measured at each study visit using standard clinical procedures. These measurements were tracked across at baseline, visit 2 and 3 to assess ancillary clinical changes during the observation period.

2.8. Lipid Profile Measurements

The primary efficacy measures comprised the fasting lipid profile, specifically:

- Total cholesterol (mmol/L)
- Low-density lipoprotein cholesterol (mmol/L)
- High-density lipoprotein cholesterol (mmol/L)
- Triglycerides (mmol/L)

Lipid values were measured at baseline, visit 1 and visit 2, allowing within-patient change-from-baseline analyses over the observation period.

2.9. Rosuvastatin Usage Pattern

The prescribed dose of rosuvastatin (Roshal™) was recorded at each visit at four possible strengths: 5 mg, 10 mg, 20 mg, and 40 mg. Dose adjustments between visits were documented alongside reasons for change where applicable.

2.10. Adherence Assessment

Patient adherence to the prescribed rosuvastatin regimen was assessed at each follow-up visit and categorized at the ordinal level into three categories: Poor, Medium, and High adherence. Adherence evaluations were recorded at visit 2 and visit 3 and formed the basis for one of the secondary endpoints.

2.11. Safety Assessment

Adverse events were captured at each follow-up visit through spontaneous reporting and physician questioning. Each event was classified for severity using the standard mild/moderate/severe grading, and the causality relationship to study medication was determined by the treating physician. Action taken in response to each adverse event—including dose modification, no action, or discontinuation—was documented.

2.12. Physician Global Assessment

At the conclusion of the observation period, the treating physician provided a global assessment of efficacy and safety for each patient using a three-point categorical scale. This assessment integrated both biochemical response and clinical impression.

2.13. Statistical Methods

Basic descriptive statistics were applied to all efficacy measures, with results analysed in terms of patients available at each study site. For the primary efficacy data, mean values and standard deviations were calculated. A two-tailed p value < 0.05 was considered statistically significant for all comparisons.

2.14. Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki and local applicable regulations governing non-interventional research. All participants provided written informed consent prior to entry into the study, authorizing the use of their personal and health data for research purposes. Patient confidentiality was maintained throughout, with all data handled in accordance with the protocol's confidentiality provisions established by the sponsor. Participation was voluntary, and no investigational procedures beyond routine clinical care were performed.

3. Results

A total of 419 patients with dyslipidemia were enrolled and followed over the observation period. The demographic profile of the cohort reflected a middle-to-older-aged population with a female predominance. The mean age was 53.97 ± 13.41 years. The age distribution was as follows: 21 - 30 years (2.2%), 31 - 40 years (14.2%), 41 - 50 years (27.2%), 51 - 60 years (25.7%), 61 - 70 years (18.5%), 71 - 80 years (9.5%), and above 80 years (2.7%). Females constituted the majority of

participants (59.6%, n = 239) compared with males (40.4%, n = 162).

Of 419 patients enrolled, 405 (96.7%) completed Visit 1 (3 months) and 379 (90.5%) completed Visit 2 (6 months); 40 patients (9.5%) were lost to follow-up, predominantly asymptomatic patients who did not return for scheduled visits—a recognised challenge of real-world follow-up in this setting. Unless otherwise stated, lipid and safety analyses reflect patients with data available at each respective visit; paired baseline-follow-up comparisons are restricted to patients with values recorded at both time points (Table 1).

Table 1. Baseline demographic and clinical characteristics.

Parameter	Category	n	%
Gender	Female	239	57.0
	Male	162	38.7
	Not recorded	18	4.3
Dyslipidemia duration	Newly diagnosed	237	56.6
	6 months - 1 year	50	11.9
	1 - 3 years	71	16.9
	>3 years	61	14.6
Family history of dyslipidemia	Yes	112	26.7
	No	229	54.7
	Not recorded	78	18.6
Comorbidities	Diabetes	96	22.9
	Hypertension	256	61.1
	Obesity	62	14.8
	Coronary artery disease	12	2.9
Risk factors	Tobacco use	3	0.7
	Physical inactivity	177	42.2
	Alcohol use	77	18.4
	Poor dietary habits	257	61.3

*Denominators vary slightly across variables owing to missing data; missing-data counts are reported for each variable below.

The high prevalence of newly diagnosed dyslipidemia (56.6%) reflected limited prior case detection in routine Ghanaian primary care, while comorbidity burden was substantial, with hypertension (61.1%) and diabetes (22.9%) leading.

Of the 419 patients, 237 (56.6%) were newly diagnosed with dyslipidemia, and 182 (43.4%) were already receiving lipid-lowering therapy at enrolment (atorvastatin, simvastatin, fenofibrate, or cholestyramine). Reasons for switching to rosuvastatin included poor efficacy, poor compliance, poor tolerability/safety, and cost.

3.1. Rosuvastatin (Roshal™) Utilization Pattern

Rosuvastatin was prescribed at four dose levels (5, 10, 20, and 40 mg). At baseline, the 20-mg dose predominated (58.2%, n = 244), followed by 10 mg (37.2%, n = 156), 5 mg (3.8%, n = 16), and 40 mg (0.7%, n = 3). Across visits, modest shifts in dose distribution were observed: by Visit 2, the 20-mg cohort had reduced to 54.1% (n = 227) and the 10-mg cohort rose to 38.8% (n = 163); by Visit 2, the 20-mg proportion fell further to 51.1% (n = 214), while the 10-mg proportion rose to 41.1% (n = 172) and the 5-mg proportion rose to 7.2% (n = 30). The 40-mg subgroup remained stable at n = 3 throughout the study. Because only three participants received the 40-mg dose and data were incomplete for two of them, this group was excluded from the dose-stratified efficacy analyses.

3.2. Effectiveness on Lipid Parameters

3.2.1. Low-Density Lipoprotein Cholesterol

Rosuvastatin produced substantial and statistically significant reductions in LDL-C across both follow-up visits. The mean LDL-C declined from 4.14 ± 0.86 mmol/L at baseline to 3.57 ± 0.83 mmol/L at Visit 1 and to 3.07 ± 0.77 mmol/L at Visit 2. Reductions were 13.77% between baseline and Visit 1 ($p < 0.001$), 14.01% between Visit 1 and Visit 2 ($p < 0.001$), and 25.85% cumulatively between baseline and Visit 2 ($p < 0.001$) (Table 2).

Table 2. Dose-wise LDL-C percentage change from baseline to final visit.

Dose	n (Baseline → Visit 2)	Baseline (mmol/L)	Visit 2 (mmol/L)	% Reduction	p-value
5 mg	15 → 14	3.54 ± 0.75	2.70 ± 0.50	−23.69%	<0.001
10 mg	135 → 128	3.87 ± 0.69	2.75 ± 0.57	−28.94%	<0.001
20 mg	202 → 186	4.43 ± 0.85	3.30 ± 0.77	−25.50%	<0.001

The 10-mg cohort achieved the largest overall LDL-C reduction (28.94%), exceeding the reductions observed in the 5-mg and 20-mg arms.

Dose-stratified lipid outcomes (Table 2) group patients by the rosuvastatin dose recorded at baseline; patients could have their dose adjusted during follow-up (see Rosuvastatin Utilization Pattern), so these strata reflect starting dose rather than a fixed exposure maintained throughout the observation period.

3.2.2. Total Cholesterol

Total cholesterol declined from a baseline mean of 6.51 ± 0.97 mmol/L to 5.62 ± 0.94 mmol/L at visit 1 and to 4.89 ± 0.94 mmol/L at visit 2. Cumulative reduction from baseline to visit 2 was 24.88% ($p < 0.001$). Reductions between successive visits were 13.67% (baseline → Visit 1) and 13.12% (Visit 1 → Visit 2), both $p < 0.001$. Across dose strata, TC reductions from baseline to Visit 2 were 20.91% (5 mg), 24.06% (10 mg), and 27.02% (20 mg), all $p < 0.001$ (Figure 1).

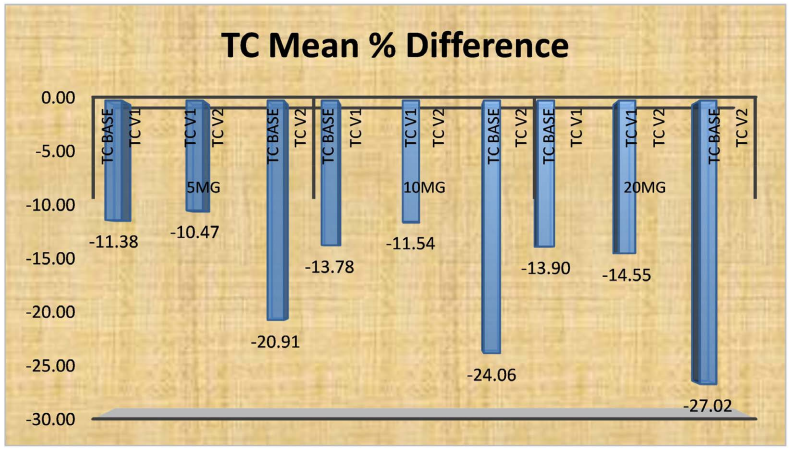

Figure 1. Mean percentage difference between visits for different doses.

3.2.3. Triglycerides

The mean triglyceride level decreased from 1.60 ± 0.75 mmol/L at baseline to 1.39 ± 0.61 mmol/L at Visit 1 and to 1.23 ± 0.61 mmol/L at Visit 2, representing a 23.12% cumulative reduction ($p < 0.001$). Stepwise reductions were 14.19% (baseline → Visit 1) and 8.82% (Visit 1 → Visit 2), both statistically significant. Dose-stratified analyses showed reductions of 32.11% in the 5-mg arm (1.62 ± 0.29 → 1.10 ± 0.26; $p < 0.001$), 18.71% in the 10-mg arm (1.55 ± 0.58 → 1.26 ± 0.54; $p < 0.001$), and 24.82% in the 20-mg arm (1.62 ± 0.88 → 1.22 ± 0.68; $p < 0.001$) (Figure 2).

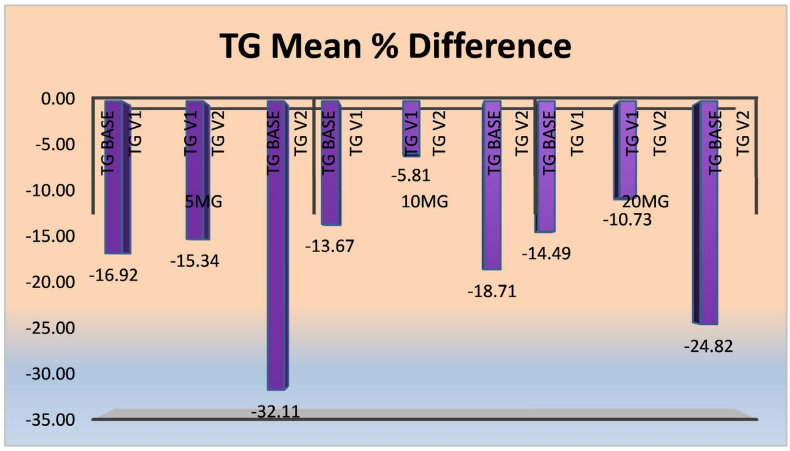

Figure 2. Mean percentage difference for TG at different doses and visits.

3.2.4. High-Density Lipoprotein Cholesterol

In contrast to the atherogenic lipid fractions, HDL-C showed a modest increase. Mean HDL-C rose from 1.59 ± 0.62 mmol/L at baseline to 1.69 ± 0.76 mmol/L at Visit 2, a 6.28% cumulative increase ($p < 0.001$). Dose-wise patterns were heterogeneous. The 20-mg arm showed a significant HDL-C increase of 13.48% ($p < 0.001$); the 5-mg arm showed a 15.16% reduction ($p = 0.006$); and the 10-mg arm showed a non-significant 4.01% reduction ($p = 0.297$).

3.3. Vital Signs and Body Weight

Ancillary improvements were observed in blood pressure and body weight across the study period (Table 3).

Table 3. Mean changes in vital signs and body weight across visits.

Parameter	Baseline	Visit 1	Visit 2
Weight (kg)	80.84 ± 14.34	78.34 ± 12.99	77.36 ± 12.44
Systolic BP (mmHg)	141.25 ± 23.27	131.75 ± 15.87	126.84 ± 12.48
Diastolic BP (mmHg)	83.93 ± 13.31	79.83 ± 9.47	77.57 ± 9.44

Mean systolic blood pressure declined by 14.41 mmHg from baseline to Visit 2, while diastolic blood pressure declined by 6.36 mmHg. Mean body weight decreased by 3.48 kg over the same period.

3.4. Treatment Adherence

Adherence to the prescribed rosuvastatin regimen was favourable. At visit 1, all 107 patients with evaluable adherence data demonstrated medium adherence (100.0%). By visit 2 (n = 419), the distribution was as follows: poor adherence 0.5% (n = 2), medium adherence 42.0% (n = 176), and high adherence 57.5% (n = 241). The shift from uniform medium adherence at visit 1 toward a predominantly high-adherence profile at visit 2 reflects sustained engagement with therapy over the observation period.

3.5. Safety and Tolerability

Rosuvastatin was well tolerated throughout the study. At visit 1, four adverse events were reported (3.7% of the assessed population): one mild nausea, one mild headache, and two palpitations (one mild, one moderate). All four events prompted a dose reduction. At visit 2, two adverse events were recorded (0.5% of participants)—both palpitations (one mild, one moderate). Both cases resulted in dose reduction; for the mild case, no concomitant action was taken.

The overall adverse event rate was therefore low (<1.5% across both follow-up visits), with palpitations being the most frequently reported event. No serious adverse events, deaths, or treatment discontinuations were documented.

3.6. Physician Global Assessment

At the conclusion of the observation period, physicians' global assessment of efficacy and safety was overwhelmingly favourable. 153 participants (36.5%) were rated as Excellent, 263 (62.8%) as Good, and 3 (0.7%) as Fair. The combined "Excellent + Good" proportion was 99.3% of the cohort (Figure 3).

4. Discussion

The PEARL study provides comprehensive real-world evidence on rosuvastatin

usage among 419 Ghanaian adults with dyslipidemia, offering insights that complement and extend the existing randomized trial literature. The demographic and clinical profile of the cohort is consistent with the broader African dyslipidemia literature, in which hypertension (61.1%), diabetes (22.9%), obesity (14.8%), and coronary artery disease (2.9%) are commonly documented comorbidities. Notably, 56.6% of participants were newly diagnosed with dyslipidemia at study entry, suggesting that despite the high background prevalence of lipid disorders in Ghana, a substantial proportion of cases remain undetected in routine care. This finding reinforces calls for enhanced screening strategies at the primary care level [3].

Figure 3. Global assessment of efficacy and safety of treatment by physician.

Rosuvastatin (Roshal™) produced clinically meaningful and statistically significant reductions in all measured lipid parameters across the two follow-up visits. The mean LDL-C fell from 4.14 ± 0.86 mmol/L at baseline to 3.07 ± 0.77 mmol/L at Visit 2, representing a 25.85% mean reduction ($p < 0.001$). The 10-mg dose cohort exhibited the largest LDL-C reduction (28.94% from baseline to visit 2), followed by the 5-mg (23.69%) and 20-mg (25.50%) cohorts. The larger proportional reduction in the 10-mg group reflects lower baseline values relative to the 20-mg cohort rather than a true dose-inverse response. Stepwise reductions between visits—from baseline to Visit 1 (13.77%) and from Visit 1 to Visit 2 (14.48%)—indicate a sustained and progressive lipid-lowering effect rather than a plateau after initial therapy.

The reductions achieved in our study (in the range of 14% - 32% across lipid fractions) are consistent with, though somewhat lower than, the 46% - 55% LDL-C reductions reported for high-intensity rosuvastatin therapy in controlled trials [9]. This discrepancy is expected in an observational setting, where adherence variability, comorbidity burden, and concurrent medications modulate therapeutic response [11]. Nevertheless, the magnitude of effect observed is clinically meaningful; even modest LDL-C reductions translate to substantial cardiovascular risk reduction in primary and secondary prevention populations [8].

Total cholesterol declined from 6.51 ± 0.97 mmol/L at baseline to 4.89 ± 0.94 mmol/L at Visit 2 (24.88% mean reduction, $p < 0.001$), and triglyceride levels fell from 1.60 ± 0.75 mmol/L to 1.23 ± 0.61 mmol/L (23.12% mean reduction, $p < 0.001$), with dose-wise reductions ranging from 18.71% to 32.11%. HDL-C showed a more modest but directionally favourable increase of 6.28% from baseline to Visit 2. The overall pattern—marked reductions in atherogenic lipoproteins accompanied by an HDL-C increase—aligns with the well-characterized lipid effects of rosuvastatin observed in real-world cohorts worldwide [10] [11] [14] and supports the agent's continued recommendation as a preferred high-intensity statin in international dyslipidemia guidelines.

The reduction in cardiovascular risk surrogates extended beyond lipid panels. Mean systolic blood pressure declined from 141.25 mmHg at baseline to 126.84 mmHg at Visit 2, while diastolic blood pressure fell from 83.93 mmHg to 77.57 mmHg, and mean body weight decreased modestly from 80.84 kg to 77.36 kg. While these ancillary improvements likely reflect broader management of comorbid hypertension and lifestyle counselling rather than a direct statin effect, their co-occurrence underscores the multifaceted benefit of comprehensive cardiovascular risk management in dyslipidemia care.

The dose distribution observed in PEARL is informative for routine practice. At baseline, 58.2% of participants were receiving rosuvastatin 20 mg, 37.2% the 10-mg dose, 3.8% the 5-mg dose, and only 0.7% the 40-mg dose. This distribution shifted modestly across visits, with the 5-mg and 10-mg cohorts gaining incremental patients at the expense of the 20-mg cohort, reflecting dose reductions primarily driven by adverse event management. The predominance of moderate-intensity dosing in our cohort reflects pragmatic prescribing in real-world Ghanaian practice and is consistent with prior studies suggesting clinicians often initiate statins at moderate rather than high-intensity doses, even in patients with established CVD risk [8].

Medication adherence emerged as a critical determinant of therapeutic outcome. At Visit 1, all assessed participants ($n = 107$) demonstrated medium adherence, while at Visit 2 the distribution shifted to 0.5% poor, 42.0% medium, and 57.5% high adherence. The improvement from Visit 1 to Visit 2 suggests that structured follow-up and counselling embedded within the observational study design itself may have reinforced adherence behaviours—a phenomenon documented in other statin adherence research [13]. Sustained adherence rates in our cohort exceeded the ~58% average reported in resource-limited settings by Bowry and colleagues [8].

Rosuvastatin demonstrated a favourable safety profile in the PEARL cohort. At Visit 1, four participants experienced adverse events (one mild nausea, one mild headache, and two cases of palpitation—one mild and one moderate), prompting dose reductions. At Visit 2, two participants reported palpitations (one mild, one moderate), again necessitating dose reduction; for the mild case, no action was required. The overall adverse event rate was therefore low (<1.5% across both visits), with palpitations being the most common complaint. The low frequency of

myalgia, hepatic enzyme elevation, or other statin-typical adverse events in our study is reassuring, particularly given that participants carried substantial comorbidity burdens including diabetes (22.9%) and hypertension (61.1%).

The overwhelmingly positive physician global assessment—99.3% Excellent or Good (36.5% Excellent, 62.8% Good) and only 0.7% Fair—suggests strong clinical satisfaction with rosuvastatin's profile in this Ghanaian cohort. This integrated assessment, capturing both biochemical response and clinical impression, complements the lipid-panel findings and reinforces rosuvastatin's overall usefulness in cardiovascular risk management.

The PEARL study has several strengths. It is, to our knowledge, one of the largest prospective observational evaluations of rosuvastatin in a West African population, capturing real-world prescribing, dosing, adherence, physician global assessment, and multiple outcomes across multiple sites in Ghana. The inclusion of dose-stratified analyses adds granular evidence to the global rosuvastatin literature, which has been dominated by Western and East Asian cohorts [11] [14]. The study captured clinically meaningful secondary metrics—adherence trajectories, blood pressure, weight, and adverse events—which collectively support rosuvastatin's value in comprehensive cardiovascular risk reduction.

There are several limitations as well. First, as a non-interventional observational study, PEARL lacks a randomized comparator arm; conclusions regarding rosuvastatin's relative effectiveness versus other statins or treatment strategies must therefore be interpreted with caution and triangulated against RCT evidence. Second, the absence of a placebo or standard-of-care control precludes direct attribution of lipid changes solely to rosuvastatin versus concurrent lifestyle or pharmacological interventions. Third, the 40-mg dose subgroup was too small for meaningful dose-response inference. Fourth, adherence was assessed using a categorical prescribing-based scheme rather than objective pill-count or pharmacy-refill data, which may have introduced reporting bias.

5. Conclusion

The PEARL study demonstrates that rosuvastatin (Roshal™) is effective, well-tolerated, and accepted in a real-world Ghanaian dyslipidemia cohort, producing significant reductions in LDL-C, TC, and TG over the observation period with a low adverse event burden. Improvements in adherence across follow-up visits suggest that structured observational engagement can itself reinforce treatment persistence. The favourable physician global assessments reinforce the overall clinical utility of rosuvastatin in routine Ghanaian practice. These findings support the incorporation of rosuvastatin into routine Ghanaian lipid management protocols and provide a foundation for larger, long-term outcomes research in West African populations.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

[1] Kodelinishiya, A., Kowsika, K., Yathusha, K., Thuvaragan, S., and Guruparan, M. (2025) Statin Adherence and Medication Knowledge among Ischemic Heart Disease Patients at a Tertiary Hospital in Northern Sri Lanka. *Journal of Health Sciences and Innovative Research*, **6**, 48-57. https://doi.org/10.31357/jhsir.v6i01.8606

[2] Mach, F., Baigent, C., Catapano, A.L., Koskinas, K.C., Casula, M., Badimon, L., *et al.* (2019) 2019 ESC/EAS Guidelines for the Management of Dyslipidaemias: Lipid Modification to Reduce Cardiovascular Risk. *European Heart Journal*, **41**, 111-188. https://doi.org/10.1093/eurheartj/ehz455

[3] Eghan Jr., B.A. and Acheampong, J.W. (2003) Dyslipidemia in Outpatients at General Hospital in Kumasi, Ghana: Cross-Sectional Study. *Croatian Medical Journal*, 44, 576-578.

[4] World Health Organization (2009) Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks. World Health Organization, 62 p.

[5] Doku, A., Tuglo, L.S., Boima, V., Agyekum, F., Aovare, P., Abdulai, M.A., *et al.* (2024) Prevalence of Cardiovascular Disease and Risk Factors in Ghana: A Systematic Review and Meta-Analysis. *Global Heart*, **19**, Article 21. https://doi.org/10.5334/gh.1307

[6] Micah, F.B. and Nkum, B.C. (2012) Lipid Disorders in Hospital Attendants in Kumasi, Ghana. *Ghana Medical Journal*, **46**, 14-21.

[7] BeLue, R., Okoror, T.A., Iwelunmor, J., Taylor, K.D., Degboe, A.N., Agyemang, C., *et al.* (2009) An Overview of Cardiovascular Risk Factor Burden in Sub-Saharan African Countries: A Socio-Cultural Perspective. *Globalization and Health*, **5**, Article No. 10. https://doi.org/10.1186/1744-8603-5-10

[8] Suhrcke, M., Boluarte, T.A. and Niessen, L. (2012) A Systematic Review of Economic Evaluations of Interventions to Tackle Cardiovascular Disease in Low- and Middle-Income Countries. *BMC Public Health*, **12**, Article No. 2. https://doi.org/10.1186/1471-2458-12-2

[9] Colivicchi, F., Gulizia, M.M., Franzini, L., Imperoli, G., Castello, L., Aiello, A., *et al.* (2016) Clinical Implications of Switching Lipid Lowering Treatment from Rosuvastatin to Other Agents in Primary Care. *Advances in Therapy*, **33**, 2049-2058. https://doi.org/10.1007/s12325-016-0412-8

[10] Fox, K.M., Gandhi, S.K., Ohsfeldt, R.L., Blasetto, J.W. and Bays, H.E. (2007) Effectiveness of Rosuvastatin in Low-Density Lipoprotein Cholesterol Lowering and National Cholesterol Education Program Adult Treatment Panel Guideline III LDL-C Goal Attainment Compared to Other Statins among Diabetes Mellitus Patients: A Retrospective Study Using an Electronic Medical Records Dataset in the United States. *Current Medical Research and Opinion*, **23**, 2125-2133. https://doi.org/10.1185/030079907x219580

[11] Gandhi, S.K., Järbrink, K., Fox, K.M. and Brandrup-Wognsen, G. (2009) Effectiveness of Rosuvastatin in Reducing LDL-C and Target LDL-C Goal Attainment in Real-World Clinical Practice. *Current Medical Research and Opinion*, **25**, 2817-2828. https://doi.org/10.1185/03007990903333389

[12] Heintjes, E.M., Hirsch, M.W., van der Linden, M.W., O'Donnell, J.C., O'Donnell, J.C., Stalenhoef, A.F., *et al.* (2008) LDL-C Reductions and Goal Attainment among Naive Statin Users in the Netherlands: Real Life Results. *Current Medical Research and Opinion*, **24**, 2241-2250. https://doi.org/10.1185/03007990802264487

[13] Hope, H.F., Binkley, G.M., Fenton, S., Kitas, G.D., Verstappen, S.M.M. and Symmons, D.P.M. (2019) Systematic Review of the Predictors of Statin Adherence for the

Primary Prevention of Cardiovascular Disease. *PLOS ONE*, **14**, e0201196. https://doi.org/10.1371/journal.pone.0201196

[14] Kim, D.Y., Kim, S.H., Kim, E., Han, S., Park, J., Youn, J., *et al.* (2024) ROsulord® Safety for Patients with Dyslipidemia Study: A Non-Interventional, Multicenter, Prospective, Observational Study in South Korea. *Cardiology and Therapy*, **14**, 17-29. https://doi.org/10.1007/s40119-024-00391-4