

Real-world multiple myeloma care in Nigeria: national insights into treatment patterns, access barriers and clinical decision-making

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Abstract

Purpose: Multiple myeloma (MM) is increasingly recognised across sub-Saharan Africa, yet major disparities persist in access to diagnostics, treatment and supportive care. This study assesses real-world clinical practices, guideline adherence and perceived barriers to optimal MM management among haematologists in Nigeria.

Methods: A cross-sectional, nationwide online survey was administered to Nigerian haematologists managing patients diagnosed with MM. Data were collected on clinician demographics, diagnostic approaches, treatment regimens, use of guidelines, venous thromboembolism (VTE) and infection prophylaxis and perceived challenges. Descriptive statistics were used to analyse results.

Results: Eighty-six clinicians participated. Most worked in tertiary hospitals and managed 0–5 MM patients per month. The most common presenting features were anaemia (91.9%), bone pain (88.4%) and renal impairment (59.3%). Triple-drug induction regimens were preferred by 94.2% of clinicians, with bortezomib, lenalidomide and dexamethasone being the most frequently prescribed. Financial constraint was the major determinant of regimen choice (77.9%). Maintenance therapy (89.5%) and bisphosphonate use (89.5%) were widely adopted. VTE risk assessment was routinely performed by 69.8% of respondents. Major barriers to MM care included high treatment cost (90.7%), limited access to novel therapies (70.9%) and lack of autologous stem cell transplantation (ASCT) services (68.6%).

Conclusion: Haematologists in Nigeria demonstrated strong alignment with international standards; however, systemic barriers including cost, diagnostic limitations and lack of ASCT and novel agents impede optimal care delivery. Policy reforms, subsidised treatment access, expanded diagnostic infrastructure and MM-specific training are recommended.

Keywords: *multiple myeloma, Nigeria, treatment patterns, guideline adherence, LMICs, real world*

Introduction

Multiple myeloma (MM) is a clonal plasma-cell malignancy characterised by the accumulation of malignant plasma cells in the bone marrow and the production of monoclonal immunoglobulins or light chains. Active MM is diagnosed when clonal bone marrow

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plasma cells or a biopsy-proven plasmacytoma are accompanied by myeloma-related end-organ damage, hypercalcaemia, renal impairment, anaemia or bone lesions or by one or more myeloma-defining biomarkers. These biomarkers comprise clonal bone marrow plasma cells $\geq 60\%$, an involved-to-uninvolved serum free light-chain ratio ≥ 100 provided the involved free light-chain concentration is ≥ 100 mg/L or more than one focal lesion measuring at least 5 mm on magnetic resonance imaging [1].

MM accounts for approximately 1%–2% of all cancers and about 10% of haematological malignancies [2]. Globally, an estimated 188,000 new cases and 121,000 deaths occurred in 2022, with substantial geographical variation in reported incidence and outcomes [3]. Although recorded incidence is generally lower in sub-Saharan Africa than in high-income regions, this apparent difference should be interpreted cautiously. Incomplete population-based cancer registration, limited access to diagnostic services and loss of patients before definitive diagnosis may contribute to under-ascertainment. This is particularly important because people of African ancestry have a higher prevalence of monoclonal gammopathy of undetermined significance and a greater biological susceptibility to MM than populations of European ancestry [4].

Marked global disparities exist across the MM care pathway. Advances in proteasome inhibitors, immunomodulatory agents, monoclonal antibodies, autologous stem-cell transplantation and cellular therapies have substantially improved survival in well-resourced settings. However, these benefits have not been distributed equitably. Access to timely diagnosis, risk stratification, novel therapies, transplantation and clinical trials remains strongly influenced by geographical location, socioeconomic circumstances and healthcare infrastructure [5]. Low- and middle-income countries are markedly under-represented in the pivotal clinical trials supporting the approval of contemporary MM therapies, limiting the direct applicability of trial evidence to resource-constrained settings [6]. Importantly, evidence that racial survival disparities diminish when patients receive comparable treatment suggests that inequitable access to effective care, rather than biological differences alone, is a major determinant of outcome [5].

Studies from several African countries illustrate these challenges. In Ghana, patients commonly presented with advanced disease, substantial end-organ complications and limited access to contemporary treatment, with a reported median overall survival of 33 months [7]. Studies from Kenya have similarly documented frequent bone pain, anaemia, renal dysfunction, pathological fractures and advanced-stage disease, alongside restricted availability of diagnostic investigations and variable access to recommended treatment regimens [8,9]. In KwaZulu-Natal, South Africa, pathological fractures were the most frequent presenting feature, and approximately half of patients had International Staging System stage III disease; cytogenetic testing was not available for all patients [10]. Collectively, these studies demonstrate how delayed diagnosis, advanced presentation, diagnostic limitations and unequal access to effective therapies continue to shape MM outcomes across the continent.

The available Nigerian literature also indicates a substantial burden of late and complicated presentation. Multicentre and regional studies have reported high frequencies of bone pain, anaemia, pathological fractures and renal impairment at diagnosis [11,12]. Nevertheless, these studies have largely described the clinical characteristics and outcomes of patients treated in individual institutions or selected regions. They do not provide nationwide evidence on how haematologists diagnose, risk-stratify and treat MM in routine practice, the extent to which recommended diagnostic and therapeutic modalities are available or the barriers that influence treatment decisions. Nigeria also lacks a nationally adopted MM management guideline tailored to its healthcare system, diagnostic capacity, medicine availability and patient affordability. Consequently, the degree of variation in clinical practice across the country remains poorly characterised.

This study therefore aimed to assess real-world MM management practices among haematologists across Nigeria, including approaches to diagnosis, risk stratification, first-line treatment, transplantation, maintenance therapy and supportive care, and to identify resource limitations and other barriers affecting the delivery of guideline-concordant care. By defining prevailing practices, strengths and unmet needs, the study seeks to provide evidence to support context-appropriate national guidance, professional education and health-system interventions for improving MM care in Nigeria.

Methods

This was a descriptive cross-sectional online survey conducted among clinicians involved in the diagnosis and management of MM across Nigeria. Eligible participants included consultant haematologists and haematology residents practicing in Nigeria who were actively involved in the care of patients with MM. Clinicians who did not manage patients with MM or who submitted incomplete questionnaires were excluded from the analysis.

A purposive sampling strategy was employed to recruit clinicians with experience in MM management. The survey link was disseminated electronically through national professional haematology networks, including email and WhatsApp platforms used by members of the Nigerian haematology community. Snowball sampling was also encouraged by asking participants to forward the survey to eligible colleagues involved in myeloma care. In addition, during the 49th Annual Scientific Conference of the Nigerian Society of Haematology and Blood Transfusion held in Jos, clinicians who had not previously completed the survey were reminded and encouraged to participate. Because recruitment occurred through overlapping professional mailing lists, WhatsApp groups, conference reminders and participant referrals, the exact number of clinicians who received the survey invitation could not be determined; consequently, a response rate could not be reliably calculated. This approach was considered appropriate to maximise national participation from a relatively small specialist workforce.

A structured, self-administered questionnaire was developed following a review of current international MM guidelines and relevant literature. The questionnaire collected information on clinician demographics, practice characteristics, diagnostic approaches, treatment regimens, supportive care practices, guideline utilisation and perceived barriers to optimal MM management. Before nationwide distribution, the questionnaire was pilot-tested among five consultant haematologists to assess clarity, relevance and ease of completion. Feedback from the pilot exercise was incorporated into the final questionnaire prior to administration.

Data were collected electronically using Google Forms. Participation was voluntary and anonymous. Electronic informed consent was obtained before respondents accessed the questionnaire. Only completed questionnaires from eligible respondents were included in the final analysis.

Data were exported into IBM SPSS Statistics for Windows, version 22.0 (IBM Corp., Armonk, NY) for analysis. Descriptive statistics were used to summarise respondent characteristics and survey responses and are presented as frequencies and percentages. Because the study was primarily descriptive and aimed to characterise national practice patterns rather than test predefined hypotheses, inferential statistical analyses were not routinely performed. Open-ended responses were reviewed and synthesised into major thematic categories to summarise participants' recommendations for improving MM care.

Ethical approval was obtained from the Health Research Ethics Committee of the National Hospital Abuja. Participation was voluntary, responses were anonymous and all data were handled confidentially throughout the study.

Results

A total of 86 clinicians completed the survey. Respondents were predominantly male (49/86, 57.0%), and almost half were aged 40–49 years (42/86, 48.8%). Most had practiced haematology for 11–20 years (32/86, 37.2%), worked in a single practice setting (81/86, 94.2%) and were based in tertiary hospitals (78/86, 90.7%). The highest proportions practiced in the North Central (24/86, 27.9%) and South South (22/86, 25.6%) geopolitical zones. Nearly nine out of ten respondents managed five or fewer patients with MM each month (76/86, 88.4%), while the 50–59-year age group was reported as the most frequently encountered patient population (54/86, 62.8%) (Table 1).

Clinical presentation

Anaemia (79/86, 91.9%) and bone pain (76/86, 88.4%) were the most frequently encountered presenting features of MM, followed by renal dysfunction (51/86, 59.3%). Fatigue (32/86, 37.2%), hypercalcaemia (21/86, 24.4%), weight loss (16/86, 18.6%) and recurrent infections (14/86, 16.3%) were reported less frequently, whereas pathological fractures, hyperviscosity, paraplegia and low-back pain were uncommon (Figure 1).

First-line treatment practices

Triplet induction therapy was overwhelmingly preferred (81/86, 94.2%), demonstrating broad adoption of contemporary MM treatment strategies. Bortezomib, lenalidomide and dexamethasone (VRD) was the predominant regimen (67/86, 77.9%), followed by bortezomib, thalidomide and dexamethasone (VTD) (12/86, 14.0%), while only a small proportion prescribed other regimens. Most clinicians administered 5–6 cycles of induction chemotherapy (46/86, 53.5%), whereas 29/86 (33.7%) routinely prescribed 7–8 cycles (Table 2). Financial constraints

represented the principal determinant of regimen selection (67/86, 77.9%), followed by patient age and comorbidities (45/86 each, 52.3%), drug availability (41/86, 47.7%) and disease stage (34/86, 39.5%) (Figure 2).

Table 1. Sociodemographic and practice characteristics of respondents.

	Frequency (n)	Percentage (%)
Sex		
Male	49	57
Female	37	43
Age group (years)		
30–39	17	19.8
40–49	42	48.8
50–59	21	24.4
60–69	4	4.7
>69	1	1.2
Years of practice		
<5	16	18.6
5–10	28	32.6
11–20	32	37.2
>20	10	11.6
Current practice setting		
Single practice setting	81	94.2
Multiple practice setting*	5	5.8
Current practice setting: tertiary hospital		
Yes	78	90.7
No	8	9.3
Current practice setting: secondary hospital		
Yes	8	9.3
No	78	90.7
Current practice setting: private practice		
Yes	7	8.1
No	79	91.9
Location of practice (geopolitical zone)		
North Central	24	27.9
North East	6	7.0
North West	11	12.8
South East	7	8.1
South South	22	25.6
South West	16	18.6

Continued

Table 1. Sociodemographic and practice characteristics of respondents. Continued

Average number of myeloma patients seen per month		
0–5	76	88.4
6–10	8	9.3
11–15	1	1.2
16–20	1	1.2
Most common age range of patients with MM seen		
<40 years	1	1.2
40–49 years	7	8.1
50–59 years	54	62.8
60–69 years	24	27.9

*Explaining the workplace settings of some recipients.

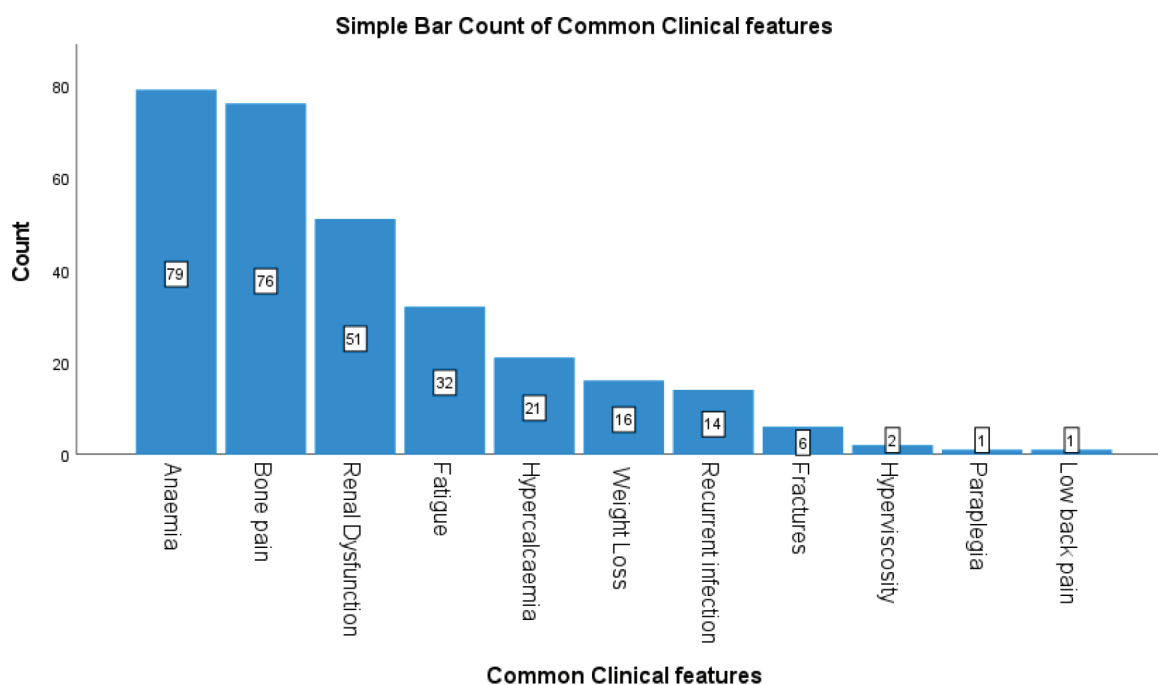


Figure 1. Distribution of clinician-reported presenting features of MM.

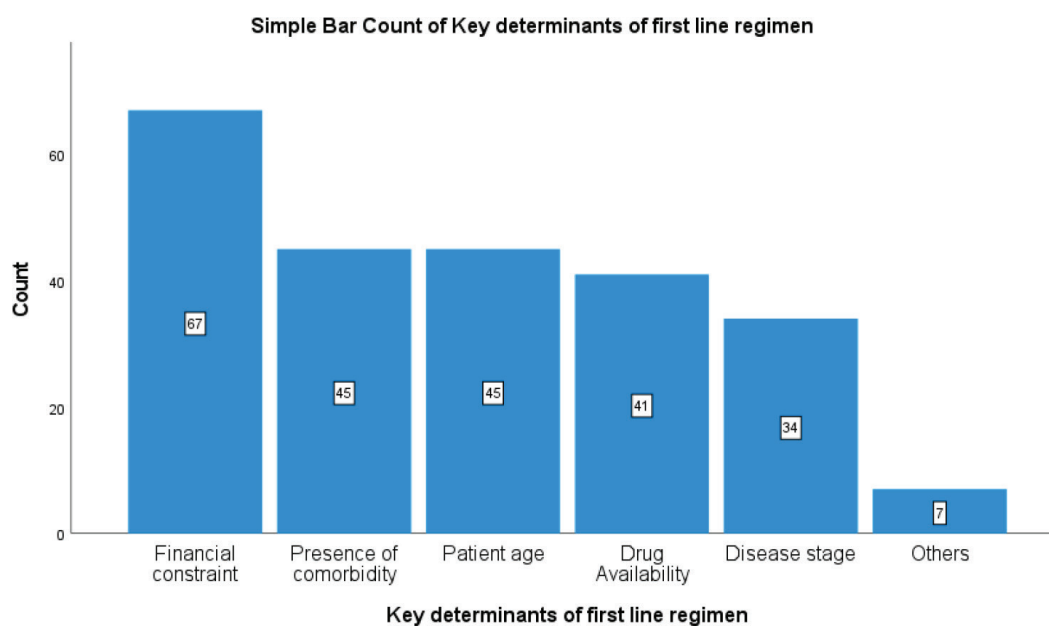
Maintenance therapy and supportive care

Maintenance therapy following induction was routinely prescribed by 77/86 (89.5%) clinicians. The commonest duration was 13–24 months (32/86, 37.2%), although 23/86 (26.7%) continued treatment beyond 2 years. Bisphosphonates were routinely prescribed by 77/86 (89.5%) respondents, with zoledronic acid accounting for almost all prescriptions (85/86, 98.8%). Monthly administration (71/86, 82.6%) and treatment durations of 6–12 months (37/86, 43.0%) were the most frequently reported practices (Table 3).

Table 2. First-line treatment regimens and chemotherapy details among respondents' patients.

	Frequency (n)	Percentage (%)
Type of regimen		
Triple regimen	81	94.2
Double regimen	5	5.8
Specific first-line regimen		
VRD	67	77.9
VCD	2	2.3
VTD	12	14.0
VD	3	3.5
TD	1	1.2
Melphalan-based	1	1.2
Number of cycles of first-line chemotherapy received		
<5 cycles	4	4.7
5–6 cycles	46	53.5
7–8 cycles	29	33.7
>8 cycles	7	8.1

C, Cyclophosphamide; Dexamethasone; R, Lenalidomide; T, Thalidomide; V, Bortezomib.

**Figure 2. Factors influencing clinicians' selection of first-line treatment regimens.**

Guideline utilisation

More than half of respondents reported following a single guideline (51/86, 59.3%), while 30/86 (34.9%) used multiple guidelines. The International Myeloma Working Group (IMWG) and National Comprehensive Cancer Network (NCCN) guidelines were each used by 39/86 (45.3%) clinicians. The leading barriers to implementation were the high cost of recommended therapies (79/86, 91.9%), limited diagnostic capacity (68/86, 79.1%) and drug unavailability (43/86, 50.0%) (Table 4).

ASH, American Society of Hematology; ESMO, European Society for Medical Oncology; IMWG, International Myeloma Working Group; NCCN, National Comprehensive Cancer Network.

Venous thromboembolism (VTE) prophylaxis

Routine VTE risk assessment before initiating therapy was performed by 60/86 (69.8%) clinicians. Direct oral anticoagulants were the preferred thromboprophylactic agents (52/86, 60.5%), followed by warfarin (23/86, 26.7%). Prophylaxis was continued throughout treatment by 44/86 (51.2%) respondents. High anticoagulant cost (41/86, 47.7%), bleeding risk (24/86, 27.9%) and poor patient adherence (16/86, 18.6%) were the principal barriers to thromboprophylaxis (Table 5).

Table 3. Maintenance therapy and supportive care practices among respondents.

	Frequency (n)	Percentage (%)
Prescription of maintenance therapy following first-line treatment		
Yes	77	89.5
No	9	10.5
Duration of maintenance therapy		
<6 months	8	9.3
6–12 months	23	26.7
13–24 months	32	37.2
>24 months	23	26.7
Routine use of bisphosphonates		
Yes	77	89.5
No	9	10.5
Commonly prescribed bisphosphonate		
Zoledronic acid	85	98.8
Alendronate	1	1.2
Frequency of bisphosphonate administration		
Monthly	71	82.6
Every 3 months	13	15.1
Weekly for alendronate	1	1.2
Duration of bisphosphonate administration		
<6 months	16	18.6
6–12 months	37	43.0
13–24 months	23	26.7
>24 months	10	11.6

Table 4. Utilisation of clinical guidelines and reported barriers among respondents.

Variable	Frequency (n)	Percentage (%)
Type of guidelines used by haematologist*		
ASH guideline	17	19.8
IMWG	39	45.3
NCCN	39	45.3
ESMO	4	4.7
Institution-specific guideline	27	31.4
No specific guidelines	6	7.0
Number of guidelines used		
None	5	5.8
Single guideline	51	59.3
multiple guidelines	30	34.9
Barriers to guidelines implementation		
High cost of drugs in guidelines	79	91.9
Diagnostic challenges	68	79.1
Drug unavailability	43	50.0
Lack of awareness/training	19	22.1

*Respondents could select >1 guideline.

Table 5. VTE risk assessment and prophylaxis practices among respondents.

Variable	Frequency (n)	Percentage (%)
Assessment of VTE risk before initiating therapy		
Yes	60	69.8
No	26	30.2
Choice of VTE prophylaxis for patients at-risk		
Aspirin	7	8.1
DOACs	52	60.5
LMWH	3	3.5
Warfarin	23	26.7
Duration of VTE prophylaxis during first-line therapy		
<3months	13	15.1
3–6 months	20	23.3
7–12 months	8	9.3
Throughout therapy	44	51.2
Key barriers to VTE prophylaxis in MM patients		
Bleeding risk	24	27.9
High cost of anticoagulants	41	47.7
Poor patient adherence	16	18.6
Limited access to recommended anticoagulants	4	4.7
Renal impairment	1	1.2

DOACs, Direct oral anticoagulants; LMWH, low molecular weight heparin; VTE, venous thromboembolism.

Infection screening and antimicrobial prophylaxis

Routine pre-treatment screening for human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV) was reported by 73/86 (84.9%) clinicians. HBV and HCV were each screened by 71/86 (82.6%) respondents, while HIV screening was reported by 68/86 (79.1%). For HBV-positive patients, antiviral prophylaxis (36/86, 41.9%) and close virological monitoring (30/86, 34.9%) were the most common preventive strategies. Routine antimicrobial prophylaxis was prescribed by 37/86 (43.0%) clinicians, predominantly using antiviral agents, antibiotics and antifungals. More than half (46/86, 53.5%) reported no standardised protocol regarding duration of prophylaxis (Table 6).

Duration refers to the length of prophylactic antimicrobial administration during active myeloma treatment.

Barriers to optimal MM care

The predominant challenge affecting MM management was the high cost of treatment, reported by 78/86 (90.7%) clinicians. Other important barriers included limited availability of novel therapies (61/86, 70.9%), lack of access to autologous stem cell transplantation (59/86, 68.6%) and late presentation of patients (56/86, 65.1%). Poor treatment adherence was identified by 37/86 (43.0%) respondents, while a few reported other barriers (2/86, 2.3%) (Figure 3).

Table 6. Microbial screening and antimicrobial prophylaxis practices among respondents.

Variable	Frequency (n)	Percentage (%)
Routine screening for HIV, HBV and HCV before initiating therapy		
Yes	73	84.9
No	13	15.1
Specific infections routinely screened for		
HIV	68	79.1
HBV	71	82.6
HCV	71	82.6
Pre-emptive management strategy for MM patients with HBV infection		
Antiviral prophylaxis	36	41.9
Close monitoring of liver function and HBV DNA levels	30	34.9
Delay chemotherapy until HBV viral suppression	20	23.3
Routine prescription of antimicrobial prophylaxis during treatment for MM		
Yes	37	43.0
No	49	57.0
Types of antimicrobial agents routinely prescribed		
Antibiotics	36	41.9
Antimicrobial against <i>Pneumocystis jirovecii</i>	21	24.4
Antifungal agents	33	38.4
Antiviral agents	37	43.0
Antimalarial agents	2	2.3

Continued

Table 6. Microbial screening and antimicrobial prophylaxis practices among respondents. *Continued*

Duration of antimicrobial prophylaxis*		
No specific intervention	46	53.5
<3 months	18	20.9
3–6 months	5	5.8
7–12 months	1	1.2
Throughout treatment	16	18.6

HBV, Hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus; MM, multiple myeloma; G-CSF. *Explaining the workplace settings of some recipients.

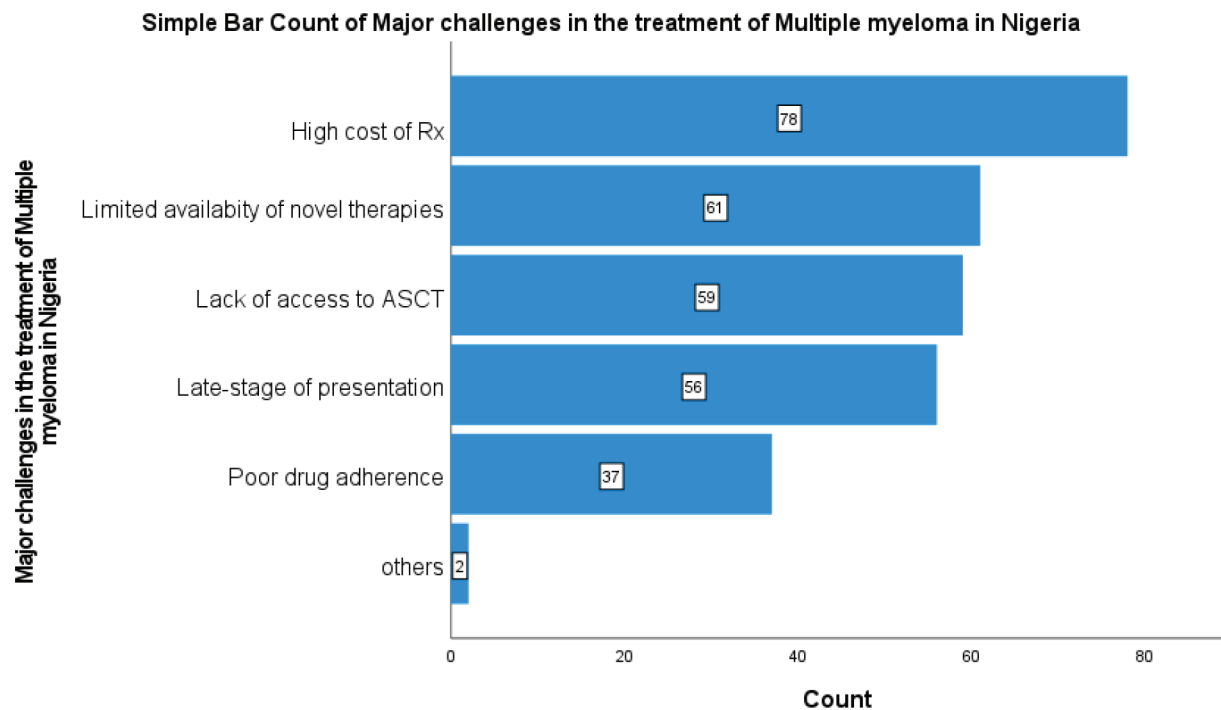


Figure 3. Clinician-reported barriers to optimal MM management in Nigeria.

Discussion

This nationwide survey provides a clinician-level account of how MM is managed across Nigeria and identifies a central tension in contemporary practice: substantial familiarity with evidence-based care coexists with limited capacity to deliver it consistently. Most respondents reported using triplet induction, maintenance therapy, bisphosphonates and international guidelines, yet treatment cost, restricted access to novel therapies, diagnostic limitations and the scarcity of autologous stem-cell transplantation (ASCT) remained dominant constraints. Rather than indicating a simple knowledge deficit, these findings suggest an implementation gap in which clinical decision-making is repeatedly

modified by affordability and health-system capacity. Similar mismatches between therapeutic advances and access have been described globally and across African and other resource-constrained settings [5,6,22].

The concentration of respondents in tertiary hospitals is consistent with the organisation of specialist haematology services in Nigeria, but it also frames the interpretation of the findings. Most clinicians managed no >5 patients with MM per month. This may reflect the relatively low recorded incidence of MM, fragmentation of referral pathways, missed or delayed diagnoses and concentration of diagnostic services in major centres; however, the survey was not designed to distinguish among these explanations. The reported predominance of patients aged 50–59 years is broadly consistent with African series in which MM is diagnosed at a younger age than in high-income populations [7–12]. Nevertheless, because respondents reported their general clinical impressions rather than patient-level ages, this finding should be interpreted as a perceived practice pattern and not as a national estimate of age at diagnosis.

Anaemia, bone pain and renal dysfunction were the manifestations most frequently encountered by respondents. This pattern is concordant with reports from Ghana, Kenya, South Africa and Nigeria, where advanced-stage disease, skeletal complications, anaemia and renal impairment are common at diagnosis [7–12]. The comparatively low frequency with which pathological fractures and neurological complications were reported should not be interpreted as evidence that these complications are uncommon nationally. It may reflect differences in case mix, incomplete imaging, referral to orthopaedic or neurosurgical services or recall. More importantly, these data describe the proportion of clinicians who reported encountering each feature, not the prevalence of the feature among Nigerian patients. Future registry-based studies should measure patient-level disease stage, renal function, skeletal events and diagnostic intervals directly.

The reported preference for triplet induction was a major strength of current practice. Triplet therapy was used by 94.2% of respondents, and VRD was the most frequently prescribed regimen. This is broadly concordant with contemporary international recommendations, which favour proteasome inhibitor- and immunomodulatory drug-based combinations for most patients with newly diagnosed MM [13–15]. However, apparent concordance at the level of regimen selection should not be equated with equivalent access or outcomes. Financial constraint influenced regimen choice for 77.9% of clinicians, while drug availability influenced 47.7%. Cost may therefore affect dose intensity, treatment continuity and the ability to use monoclonal antibodies or other newer therapies even when clinicians know the preferred standard. Global evidence indicates that access to novel agents, transplantation and clinical trials remains highly unequal and Nigerian data have documented the substantial out-of-pocket burden associated with haematological malignancies [5,6,21]. Thus, the most important therapeutic gap identified by this study is not awareness of modern regimens but the capacity to provide them reliably and sustainably.

Maintenance therapy was reported by 89.5% of respondents, supporting broad recognition of its role in prolonging disease control. Randomised and real-world evidence has demonstrated improved progression-free survival with maintenance therapy and, in selected analyses, an overall-survival benefit [16,17]. However, 63.9% of respondents reported a typical maintenance duration of 6–24 months. Contemporary practice commonly continues lenalidomide maintenance until progression or unacceptable toxicity, although duration may be influenced by transplant status, adverse effects, availability and affordability [13–15]. The use of time-limited maintenance in this setting may therefore reflect pragmatic adaptation to resource constraints rather than lack of knowledge. Because this survey did not capture the maintenance agent, dose modification, discontinuation reason or patient outcome, it cannot determine whether reported maintenance strategies achieved comparable disease control.

The high use of bisphosphonates (89.5%), predominantly zoledronic acid, is another indication of alignment with supportive-care recommendations. International guidance supports bone-targeted therapy for active MM, with treatment duration and frequency individualised according to disease activity, renal function, response and skeletal risk [18]. The shorter treatment durations reported by some respondents may reflect cost, renal impairment, drug availability or local practice, but these explanations were not measured. National guidance should therefore specify baseline dental and renal assessment, dose adjustment, monitoring for osteonecrosis of the jaw and criteria for de-escalation or discontinuation.

Guideline use was widespread but heterogeneous. Most respondents used at least one guideline, most frequently those of the IMWG or NCCN, while nearly one-third also relied on institution-specific protocols. This demonstrates strong engagement with international evidence but also exposes the limitations of importing recommendations that assume access to serum-free light-chain assays, fluorescence in situ hybridisation, advanced imaging, novel agents and transplantation. The principal barriers to guideline implementation were drug cost,

diagnostic limitations and drug unavailability, mirroring the broader global disparities literature [5,6,13–15]. A Nigerian consensus guideline should not lower the standard of care; rather, it should define minimum essential diagnostics, preferred and feasible treatment pathways, referral thresholds and acceptable alternatives when optimal resources are unavailable. Such guidance should be linked to a national MM registry so that implementation and outcomes can be audited.

VTE prevention showed both encouraging practice and important variability. Approximately 70% of respondents assessed VTE risk before treatment, and direct oral anticoagulants were the most frequently selected prophylactic agents. MM-associated VTE risk is determined by patient, disease and treatment factors, particularly immunomodulatory drugs and dexamethasone; contemporary recommendations therefore favour formal risk assessment and risk-adapted prophylaxis [19]. The predominance of direct oral anticoagulants may reflect their convenience, but comparative evidence in MM remains less mature than for aspirin or low-molecular-weight heparin, and prophylaxis must account for renal function, thrombocytopenia, drug interactions, adherence, affordability and bleeding risk [19]. The variation in prophylactic agent and duration supports incorporation of a validated risk-assessment approach and periodic reassessment into national guidance.

Infection prevention was less standardised. Although 84.9% of clinicians reported screening for HIV, hepatitis B and hepatitis C before therapy, only 43.0% routinely used antimicrobial prophylaxis and more than half reported no specific prophylaxis protocol. Routine antimicrobial prophylaxis is not required for every patient throughout the entire treatment course; it should be tailored to treatment phase, immunosuppression, prior infection, vaccination status and pathogen-specific risk. Nevertheless, international consensus recommendations emphasise structured screening, vaccination, antiviral or antibacterial prophylaxis in defined high-risk situations and immunoglobulin replacement for selected patients [20]. The present findings therefore indicate a need for harmonised, risk-adapted infection-prevention pathways rather than indiscriminate prophylaxis. Future surveys should also assess vaccination, herpes-zoster prophylaxis with proteasome inhibitors, hepatitis B reactivation prevention and access to immunoglobulin replacement.

The policy implications extend beyond individual prescribing. The convergence of high treatment cost, limited diagnostics, restricted novel-agent access and absence of widely available ASCT suggests a cascade in which structural barriers constrain risk stratification, narrow treatment options and may ultimately worsen survival. Respondents' proposals include coverage of MM diagnostics and treatment under the National Health Insurance Authority, pooled procurement and subsidy mechanisms, regional diagnostic and transplant referral networks, national treatment guidance and a prospective registry to directly address this cascade. A hub-and-spoke model could link regional centres to reference laboratories and transplant services, while virtual case-based programmes such as Project Extension for Community Healthcare Outcomes (ECHO) could support continuing education and multidisciplinary decision-making without requiring every centre to reproduce all specialist capacity. These interventions should be evaluated using patient-centred outcomes, treatment completion, financial toxicity, time to diagnosis and survival [1].

Strengths and limitations

The study's principal strength is its national focus on a clinically important but under-described aspect of cancer care: the real-world decisions and constraints reported by Nigerian haematologists. It captures treatment, supportive care, prophylaxis, guideline use and health-system barriers within a single survey and provides a foundation for national quality-improvement priorities. Several limitations must nevertheless be acknowledged. First, the sample comprised 86 clinicians, and the absence of a reliable denominator because dissemination occurred through overlapping professional networks and snowball recruitment. This precluded calculation of a conventional response rate. Second, respondents were predominantly based in tertiary hospitals; clinicians in secondary, private and less-resourced settings may therefore be under-represented, limiting generalisability. Third, participation was voluntary and may have preferentially attracted clinicians with greater interest or experience in MM, introducing selection bias. Fourth, all practices were self-reported and were not verified against prescriptions, medical records or institutional capacity; recall and social-desirability bias may consequently have inflated apparent adherence to recommended care. Fifth, several survey items permitted multiple responses, and the results represent clinician reports rather than patient-level prevalence estimates. Finally, the study did not collect patient outcomes, treatment completion, toxicity, response, progression-free survival, overall survival or economic data. It therefore cannot determine whether reported practices translated into improved outcomes. These limitations do not negate the value of the survey, but they require that the findings be interpreted as a national clinician-practice snapshot rather than a population-based audit of MM care.

Implications and future research

The next phase should move from describing practice to measuring implementation and outcomes. A prospective multicentre registry incorporating diagnostic intervals, stage and cytogenetic risk, treatment exposure, dose intensity, supportive care, financial toxicity and survival would permit evaluation of regional inequities and guideline concordance. Qualitative work involving patients, caregivers, clinicians and policymakers could clarify how referral pathways and medicine supply influence treatment completion cost. Economic evaluations are also needed to identify affordable diagnostic and therapeutic packages for NHIA coverage. Future interventional studies should assess whether national guidance, pooled procurement, regional referral networks and ECHO-supported multidisciplinary learning improve access, adherence and patient-level outcomes.

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Conflicts of interest

The authors declare no conflicts of interest.

Key objective

To assess the main barriers faced by haematologists in Nigeria when applying international guidelines to the management of multiple myeloma and to evaluate how these barriers affect patient outcomes.

Knowledge generated

This study provides physicians' perspective into multiple myeloma care from diagnosis through treatment within a resource-limited setting. It highlights the need for sustainable financing models and global oncology partnerships to improve outcomes in low- and middle-income countries.

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