

**A SEVEN-YEAR STUDY ON THE DEMOGRAPHIC PATTERN AND OUTCOME OF  
MULTIPLE MYELOMA PATIENTS MANAGED IN A TERTIARY HOSPITAL IN  
NIGER- DELTA REGION OF NIGERIA.**

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DOI: <https://doi.org/10.5281/zenodo.15631082>

**Abstract: Background:** Multiple myeloma (MM) is a B-cell neoplasm characterized by plasma cells clonal proliferation. Africans have an increased risk for MM compared to other races. Reports from Africa are few and involve small cohorts, but significant epidemiological and clinical differences from white patients. This study aims to determine the sociodemographic pattern and clinical outcome of MM patients in a Nigerian teaching hospital in South-South Nigeria. **Methods:** A retrospective review of 102 MM cases diagnosed in University of Benin Teaching Hospital (UBTH) from 2014-2020 and data were analyzed using the statistical package for social sciences (SPSS) version 23. **Results:** The incidence of MM was higher in females than males with a M: F ratio of 2:3 and the median age range was 41-55 years (46.1%) and the least affected was 86 years and above. Majority of the patients (83.3%) were discharged from the hospital and there was no significant relationship between age and gender with measured clinical outcomes. **Conclusion:** The index study showed that females were more affected with males and that the disease is common in the fifth and sixth decade of life.

**Keywords:** Multiple myeloma, Nigeria, Demographic, Clinical Outcome, Plasma cell

## **Introduction**

Multiple myeloma (MM) is a clonal proliferative disorder derived from plasma cells in the bone marrow associated with non-specific clinical manifestations including anemia, bone lesions, renal failure and hypercalcaemia (Albagoush et al, 2023). It is a common hematological malignancy (HM) with an incidence that

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is two to three times higher in African-Americans compared to Caucasians and infrequently affects Asians (Landgren et al, 2009). The disease accounts for 15-20% of all HM and 1% of all cancer-related mortality worldwide (Ferlay et al, 2015). The median age at diagnosis is noted to be higher in caucasians compared to local studies in Nigeria (Acquah et al, 2019). The etiology of MM is poorly understood, however established risk factors includes age, sex, race, obesity, and family history of hematologic malignancy. Evidence is less consistent for occupational, environmental or lifestyle factors.(Becker et al, 2011 and Lauby-Secretan et al, 2016).

Despite the significant prevalence, reports from developed countries have shown improvement in overall survival and disease free periods with the current therapeutic approach (monoclonal antibodies, immune modulators and protease inhibitors) and advent of stem cell transplant (Niels et al, 2021). Although, the outcome depends on the biology of the disease, it has been observed to vary with geographical areas as data from the Statistics, Epidemiology and End Result (SEER) program showed a significantly better survival in blacks with MM compared with whites (Che et al, 2023)

The diagnosis of the disease is clinicopathological; The diagnosis requires  $\geq 10\%$  clonal bone marrow plasma cells or a biopsy-proven plasmacytoma plus evidence of one or more multiple myeloma defining events (MDE): CRAB (hypercalcemia, renal failure, anemia, or lytic bone lesions) attributable to the plasma cell disorder, bone marrow clonal Plasmacytosis  $\geq 60\%$ , serum involved/uninvolved free light chain (FLC) ratio  $\geq 100$  (provided involved FLC is  $\geq 100$  mg/L), or  $>1$  focal lesion on magnetic resonance imaging (Rajkumar et al, 2022).

Reports from studies done on different climes suggest that at diagnosis, the epidemiological, clinical and laboratory features of black Africans differ significantly from those of Caucasian patients. (Acquah et al, 2019, Kiraka et al, 2014, Zabsonré-Tiendrebeogo et al, 2014, Fasola et al 2012 and Doualla-Bija et al, 2014) Hence, an increased understanding of MM in Africans will help improve clinical suspicion and early diagnosis or referral and ultimately be advantageous to the clinical outcome. This study therefore aims to determine the demographic pattern and clinical outcome of MM patients in a Nigerian teaching hospital in South-South Nigeria.

## **Materials and methods**

### **Study design**

A retrospective study of 102 patients diagnosed with MM at the University of Benin Teaching Hospital (UBTH), Benin City, Nigeria over a seven-year period, January 2014 to December 2020. The University of Benin Teaching Hospital is a federal government owned hospital with over 800 bed spaces, located in Egor local government area, Benin City. It receives referrals from within the state and from tertiary hospitals in neighboring states in the geo-political zone

Diagnosis was established according to definitions when at least two of the following criteria are met:

- (a) Paraprotein detectable in serum or urine with a subnormal concentration of at least one monoclonal immunoglobulin class
- (b)  $\geq 10\%$  malignant plasma cells in the bone marrow
- (c) Abnormal free light chain ratio
- (d) Reduced level of normal immunoglobulins
- (e) Clinical or laboratory features of hypercalcaemia, renal impairment, anemia and bone lesions.

The records of patients diagnosed to have MM over the study period were obtained from their case files archived at the central records department of the hospital. Demographic variables and clinical outcome were extracted from

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patient's case files and the data analyzed for descriptive statistics using the Statistical data obtained were analyzed using SPSS Statistical software version 23. The results were summarized using descriptive statistics (frequencies and percentages) and presented as tables and charts. Student's t-test and Spearman's correlation test were applied where appropriate, with level of significance set at  $p \leq 0.05$ .

## RESULTS

A total of 102 patients were diagnosed of MM over the study period. Sixty-one (59.8%) of the patients were females while forty-one (40.2%) were males. About half (46.1%) of the participants are aged between 41 and 55 years making it the modal age class while only 1% were aged 86 years and above. The mean age of respondents was 56.88 years with a standard deviation (SD) of  $\pm 12$  years. Majority (83.3%) of MM patients were discharged from the hospital during the period under review. Twelve (11.8%) of diagnosed MM patients died within the period. The treatment outcome of one patient could not be ascertained as he absconded from the hospital.

Table 2 shows that there was no significant association between gender and age with treatment outcome (DAMA, death, transferred, discharged).

## Discussion

This study corroborates previous findings that the median age at diagnosis of MM in Africans lies in the fifth and sixth decades of life (Acquah et al, 2019, Kiraka et al, 2014, Ndiaye et al, 2011). This is in contrast with Caucasian patients who are typically a decade or two older at diagnosis (Kyle et al, 2003). Virtually all the patients from the index were 40 years of age and above, an observation that has also been noted in a meta-analysis study on the global burden of the disease (Hou et al, 2025). A similar trend was reported in a larger multicenter study done in Nigeria and Ghana (Odunukwe et al, 2015 and Acquah et al., 2019). In our study, only 5.9% of patients were 40 years or younger. This is consistent with other reports from Africa, but twice as many as reported for Caucasians. (Fasola et al, 2012; Odunukwe et al, 2015, Othieno-Abinya et al, 2005 & Acquah et al, 2019). This observation could be due to the lower life expectancy in Africans, hence adjusting the incidence for age will allow for a more reliable comparison.

It has been shown that men are more likely to be diagnosed with MM than women, regardless of race (Othieno-Abinya et al, 2005; Acquah et al, 2019 & Hoffbrand et al, 2020). Unlike the above finding, we noticed a higher proportion of the disease in females than in males. The male to female was 2:3 in our study which was in contrast to findings from several studies abroad and in Africa (Gupta et al, 2023; Hou et al, 2025 & Acquah et al, 2019). The possible reason for this disparity could not be ascertained as risk factors such as chronic inflammation, exposure to chemicals and radiation, and obesity were not assessed from the medical records of respondents in this study.

The study revealed that a significant proportion (83.3%) of patients were clinically stable and discharged from the hospital and were later followed on out-patient bases. The discharge rate could be directly extrapolated to the overall survival rate. The high discharge rate could be linked with the use of targeted therapy and immune modulators (Bortezomib and Lenalidomide) in our center. Studies have shown that the use of novel agents for treating MM have a favorable outcome compared with conventional therapy (Mikhael et al, 2020 & Puertas et al, 2023)

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Discharge against medical advice (DAMA) is a global phenomenon where patients voluntarily terminate their consent to medical care before the medical team certifies them fit for discharge. The prevalence of DAMA is high (39%) amongst patients with HM in Nigeria (Dirisu et al, 2025). In contrast to that finding, only 2% of patients in this study left the hospital against medical advice. The reason for the low DAMA rate in this study could be attributed to the seemingly better prognosis of MM compared to other HMs. Dirisu et al had reported that the main reason for the high DAMA rate in their study was that some patients and/or their relatives think that HMs often have poor outcomes irrespective of whether they undergo treatment or not.

## **Conclusion**

The current study shows that MM affects mainly females and that our patients in Nigeria are about a decade or two younger than Caucasians at diagnosis.

**Conflicts of interest:** There was no conflict of interest among the authors

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