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The Burden of Multiple Myeloma in the Gulf Region

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INTRODUCTION

Multiple myeloma (MM), representing 1%-2% of all cancers worldwide and around 10% of hematologic malignancies, with a recently observed uptick in incidence rates. Despite advancements and the approval of novel therapeutic agents, MM is predominantly incurable, imparting significant humanistic and economic burdens. It was responsible for approximately 2.1 million Disability-Adjusted Life Years (DALYs) lost in 2016, and the healthcare costs associated with MM management are higher compared to many other cancers. While MM's burden has been extensively explored globally, focused studies in the Gulf region remain scarce.

OBJECTIVE

The study aims to estimate the humanistic, and economic burden of MM in Saudi Arabia (KSA), Kuwait, the United Arab Emirates (UAE), Qatar, and Oman, within the unique healthcare contexts of these countries.

METHODS

We adopted a bottom-up approach to determine the burden, beginning with an estimation of patient numbers in each country, followed by calculating the burden per individual. We relied on non-systematic literature reviews and surveys of local healthcare experts. Validation meetings were also conducted to refine and validate our findings. MM patients were categorized based on eligibility for autologous stem cell transplantation (ASCT) and disease status into newly diagnosed, relapsed/refractory, and patients on maintenance therapy (started as newly diagnosed or relapsed refractory and achieved remission). Patients were captured as a snapshot in time, providing data on their current distribution.

RESULTS

Humanistic burden

Our findings, shown in Figure 1, suggest a relative consistency in the DALYs per patient across the countries studied, with an average of 8 DALYs per patient. Oman was an outlier, displaying fewer DALYs, likely due to a lower life expectancy of the normal population at diagnosis—a factor critical in computing the years of life lost.

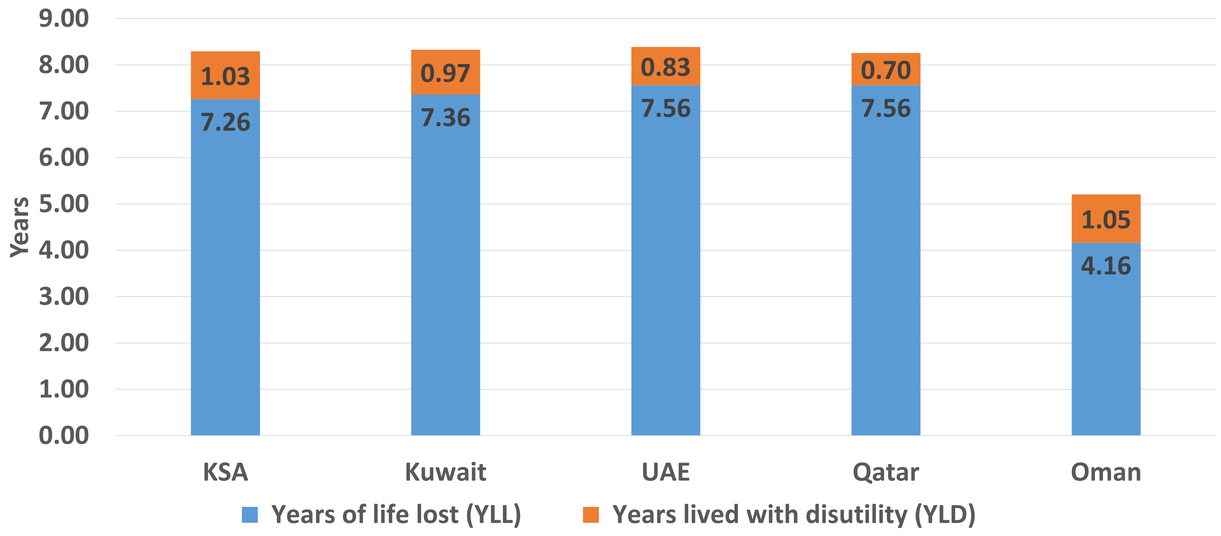

Figure 1: *Disability-adjusted life years (DALYs) per patient*

In comparing patient subgroups, those ineligible for transplantation incurred higher DALYs compared to their eligible counterparts. This trend persisted when comparing relapsed/refractory patients to those newly diagnosed. The highest DALYs were noted among relapsed/refractory patients not eligible for transplantation, while the lowest was observed in patients undergoing maintenance therapy (Figure 2).

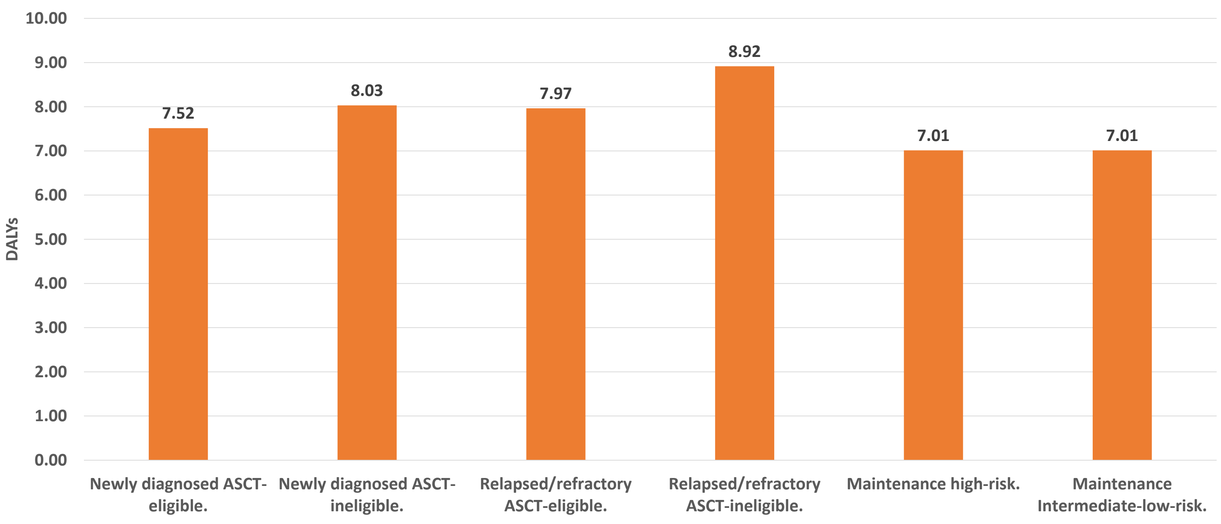

Figure 2: *Average DALYs per patient per classification*

Economic burden

Direct costs

The UAE registered the highest annual direct medical cost per MM patient, surpassing 370 thousand USD. Despite KSA's MM patient count being nearly double that of the UAE, their annual direct medical cost was comparable, suggesting a per-patient cost increment in the UAE due to a greater proportion receiving treatment abroad (Table 1).

Table 1: *Annual direct medical cost per patient and per population (USD 2022)*

	Annual direct medical cost *per population (USD 2022)*	Annual direct medical cost *per patient (USD 2022)*
KSA	136,506,224	177,419
Kuwait	33,559,154	125,221
UAE	131,384,256	372,260
Qatar	28,796,555	239,971
Oman	20,636,147	135,764

The average costs across all countries per patient were notably higher for transplant-eligible patients, due to the transplantation high cost. Relapsed/refractory patients ineligible for transplants faced substantial costs, due to the prolonged treatment necessary until disease progression (Figure 3).

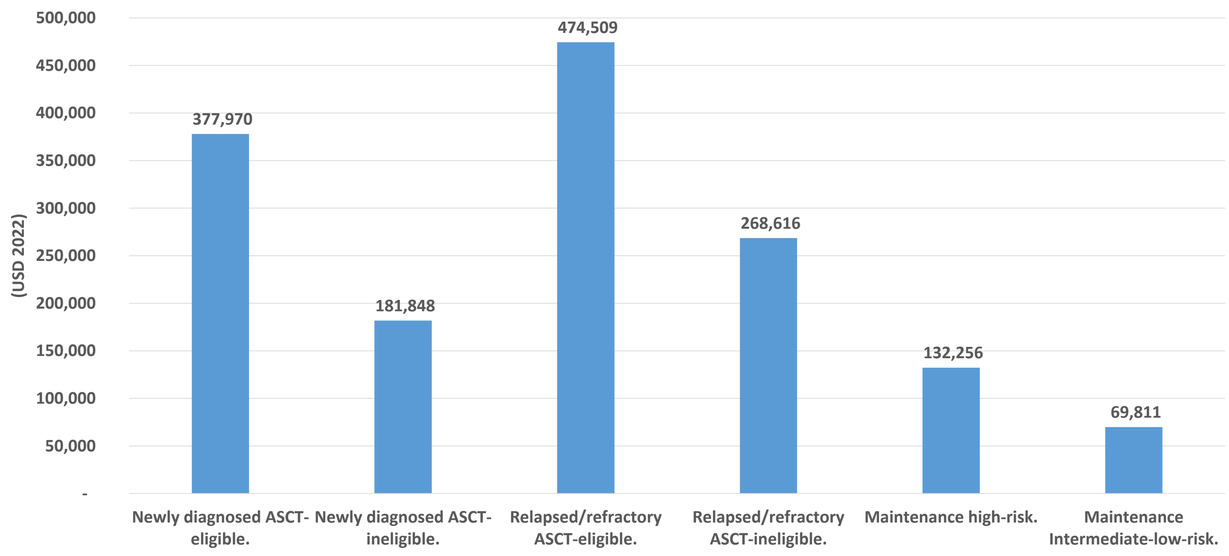

Figure 3: *Annual direct medical cost per patient per classification (average across all countries)*

Indirect costs

Patient indirect costs spanned from 1.1 million USD in Oman to approximately 5 million USD in the UAE (Figure 4). Indirect costs were comparatively minor, comprising less than 10% of the total economic burden in all countries.

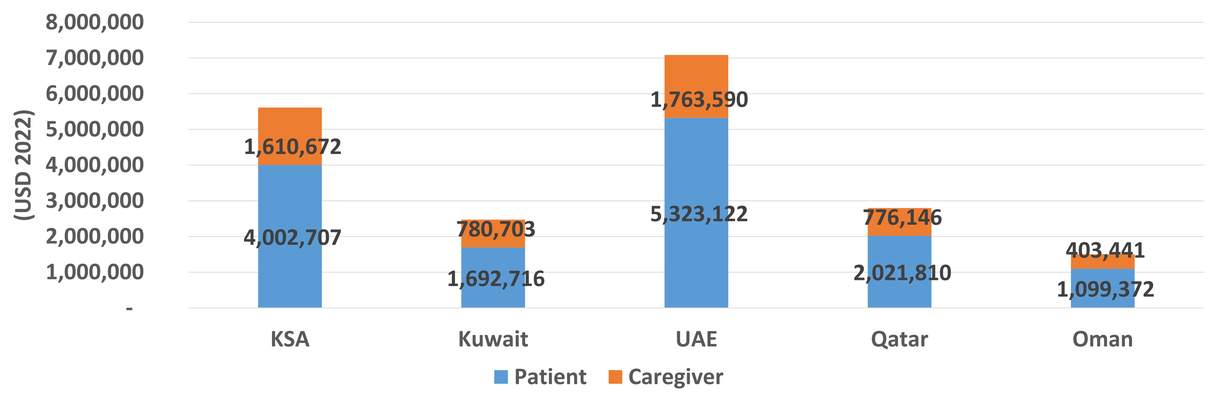

Figure 4: *Total annual indirect costs per population*

CONCLUSION

MM imposes a significant burden on the Gulf region, especially the economic burden. The relapsed/refractory ASCT-ineligible group recorded the highest DALYs across all groups while the relapsed/refractory ASCT-eligible group incurred the highest direct medical costs. The economic burden of MM was found to be approximately 20 times greater than that of breast and colon cancers, underscoring the significant financial strain it places on healthcare systems. The study highlights a substantial unmet medical need, especially among relapsed/refractory patients. Healthcare policies and strategic resource allocation should be tailored to mitigate the burden of MM patients in the Gulf region.

REFERENCES

1. Rajkumar SV. Multiple myeloma: 2016 update on diagnosis, risk-stratification, and management. American journal of hematology. 2016;91(7):719-34.
2. Liu J, Liu W, Mi L, Cai C, Gong T, Ma J, et al. Burden of multiple myeloma in China: an analysis of the Global Burden of Disease, Injuries, and Risk Factors Study 2019. Chinese Medical Journal. 2023:10.1097.
3. Abdrabou AK, Sharif FA, Fakih RE, Hashmi S, Khafaga YM, Alhayli S, et al. Outcomes of autologous stem cell transplantation for multiple myeloma in Saudi Arabia. Annals of Saudi medicine. 2021;41(4):198-205.
4. Bessou A, Colin X, De Nascimento J, Sopwith W, Ferrante S, Gorsh B, et al. Assessing the treatment pattern, health care resource utilisation, and economic burden of multiple myeloma in France using the Système National des Données de Santé (SNDS) database: a retrospective cohort study. The European Journal of Health Economics. 2023;24(3):321-33.