

Assessing the Effect of Adherence on Patient-reported Outcomes and Out of Pocket Costs Among Patients With Multiple Myeloma

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Abstract

It is unclear how medication adherence affects the burden of multiple myeloma (MM). Overall, 162 adults with MM completed an online survey. Better medication adherence related to less impairment to work productivity and functioning, lower out of pocket costs, and fewer office visits. With increased survival, considering the quality of life for patients with MM will be essential.

Background: The present study characterized the effect of multiple myeloma (MM) on work productivity, health care resource usage, and out of pocket costs (OOPCs) and examined the association of adherence with quality of life (QoL) and productivity loss. **Materials and Methods:** The present cross-sectional study included 162 patients categorized by their 4-item Morisky Medication Adherence Scale (MMAS-4) score (4 vs. ≤ 3). Online surveys included the Work Productivity and Activity Impairment questionnaire, Functional Assessment of Cancer Therapy–Multiple Myeloma (FACT-MM), and MM-specific questions. **Results:** On average, patients reported FACT-MM scores of 98.5 ± 29.3 , absenteeism of $18.3\% \pm 17.8\%$, presenteeism of $51.8\% \pm 30.2\%$, overall work productivity impairment of $57.3\% \pm 31.7\%$, and activity impairment of $49.9\% \pm 29.5\%$ in the previous 7 days. During the previous 3 months, the mean OOPCs were $\$709 \pm \1307 ; prescription medications accounted for 55% of these costs. Patients attended 4.1 ± 4.6 visits to oncologists or hematologists during that time, which accounted for 45% of the OOPCs. Patients spent an average of 6.8 ± 8.3 hours at MM-related monthly appointments, and 35.2% reported frustration while at the doctor's office. Patients with an MMAS-4 score of 4 reported higher FACT-MM scores (106.9 vs. 89.2; $P < .001$). Patients with an MMAS-4 score of ≤ 3 reported greater activity impairment (56.5% vs. 39.8%; $P = .015$) and feeling overwhelmed or frustrated with rescheduling MM appointments (64.0% vs. 26.0%; $P = .002$). **Conclusion:** MM was associated with significant workplace and functional impairment, high OOPCs, and frequent office visits. High medication adherence was associated with better outcomes across these domains. As survival for patients with MM improves, patient QoL should be considered to enhance these outcomes.

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Keywords: Direct costs, Functional impairment, Health care resource usage, Quality of life, Work productivity impairment

Introduction

Multiple myeloma (MM) is a systemic malignancy of plasma cells that is highly treatable but rarely curable.¹ In the United States, MM is the second most prevalent hematologic cancer,² with nearly

100,000 Americans currently living with the disease.³ The mean 5-year survival rate for MM patients has been found to range from 15% to 20%.⁴ This represents a dramatic improvement during the past 20 years owing to rapid therapeutic advances.⁵⁻⁷

The current treatment options for MM include radiation therapy, surgery, targeted therapy, chemotherapy, steroids, and/or stem cell transplantation.⁸ The treatment choice is determined largely by the age and general health of the patient, their eligibility for stem cell transplantation, and previous therapy received.⁹ Adjunctive therapies can help to alleviate the symptoms of end organ damage and side effects of MM treatment. For example, bisphosphonates are commonly used to prevent pathologic fractures, and anticoagulants might be prescribed to decrease the risk of developing blood

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Submitted: Aug 16, 2017; Revised: Jan 4, 2018; Accepted: Jan 24, 2018; Epub: Jan 31, 2018

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clots.⁸ Physicians have reported that treatment choice should closely adhere to the preferences of the patients and families.⁹

Little research has examined treatment adherence among MM patients. The results from a previous study from the United Kingdom suggested that > 90.0% of patients were adherent to oral chemotherapy.¹⁰ However, follow-up interviews with patients suggested some misunderstanding among certain age and ethnic groups that could have led to poor adherence. Using pharmacy claims data, another study found that the prescription costs incurred by patients did not influence their adherence to oral MM treatments.¹¹ Collectively, the limited available data have typically focused on adherence as an endpoint; however, the effect of adherence on subsequent humanistic and economic outcomes for patients with MM remains unexplored.

The diagnosis and treatment of MM have been consistently associated with impairments in quality of life (QoL).^{12,13} Pain, fatigue, and poor physical functioning are commonly reported by patients with MM, even among those with stable disease.¹⁴ When compared with gender- and age-matched controls, patients with MM had significantly lower QoL.¹⁵ However, a critical review of the published data found few studies that had used QoL as an endpoint in clinical trials involving patients with MM, despite the recognized effect of treatment on QoL and recommendations for QoL data to help guide clinical decision making.¹⁶

Previous research has indicated that fewer than half as many patients with MM were employed after treatment compared with before the diagnosis (66.0% vs. 33.0%), a significant decrease in employment.¹⁷ Additionally, the out of pocket costs (OOPCs) associated with care were found to be substantial, with respondents reporting that their initial treatment costs were equivalent to one third of their annual income. According to a recent study, most MM patients surveyed (71.0%) reported at least a modest financial burden associated with their disease.¹⁸ These results reinforce the considerable effect MM can have on both labor force participation and economic burden.

To date, the previous data have not quantified several dimensions of patient burden in MM or evaluated whether adherence might influence the nature and/or extent of this burden. In addition, few studies have examined health care resource usage (HRU), OOPCs, QoL, or work productivity and activity impairment among patients with MM. Because QoL and economic considerations can play a major role in treatment decisions for those with MM, it is imperative to understand the effect of MM on patient-reported outcomes in a real world setting. The present study characterized the burden of MM from the perspective of patients undergoing treatment in the modern era of therapy. We also assessed patient-reported adherence and its association with QoL, HRU, OOPCs, temporal burden, and impairment of work productivity and daily activities among patients with MM who were adherent to treatment.

Materials and Methods

Data Source

We performed a cross-sectional survey of 162 US adults (aged ≥ 18 years) with MM. A mixed recruitment strategy was used, such that patients were recruited from the Lightspeed Global Market Insite panel and its partners, through advocacy groups, and from social media platforms (ie, Rare Patient Voice [available at:

www.rarepatientvoice.com], Endeavour Clinical Solutions [available at: <http://endeavour-clinical.com>]) and included patients with MM who were currently receiving a treatment regimen of either oral therapy only or injectable therapy, with or without oral medication. The respondents were prescreened for eligibility using an online questionnaire, which consisted of an informed consent acknowledgment and the inclusion and exclusion criteria. Qualified respondents then proceeded to the main study questions. The respondents who completed the main survey received incentives, typically reward points or currency offered by their panels, which were of fair market value for their time.

To be eligible for enrollment in the study, the patients must have reported a diagnosis of MM, been aged ≥ 18 years, and agreed to participate. Patients who were taking their first medication for induction or maintenance treatment of MM had to have been taking this medication for ≥ 8 weeks (first-line therapy cohort). Patients who were not taking their first medication for MM treatment because the first medication had not worked or had stopped working must have been receiving their current treatment for a minimum of 6 weeks (second-line therapy or higher cohort). Patients who did not meet the inclusion criteria and/or who had reported a diagnosis of lymphoma, leukemia, or myelodysplastic syndrome were not eligible to participate in the present study. The Sterling Institutional Review Board (Atlanta, GA) approved the study protocol.

Disease History and Patient Characteristics

Demographic Data. The demographic variables included gender (male or female), age (continuous), race/ethnicity (white, black, Asian, Hispanic/Latino, unknown/other), marital status (single, married/in committed relationship, separated/divorced/widowed), employment status (currently employed, unemployed), household income ($< \$49,999$, $\geq \$50,000$, declined to answer), education (some high school, high school graduate or equivalent, some college, associate's degree, college graduate, some graduate school, completed graduate school), and health insurance (yes, no).

Health History. The body mass index (BMI; continuous), alcohol use (never vs. currently or used to drink), and comorbidity burden (Charlson comorbidity index [CCI])¹⁹ were measured. The CCI assesses the comorbidity burden by summing and then weighting the self-reported presence of several different medical conditions (eg, chronic pulmonary disease, myocardial infarction); higher scores represent a greater patient burden from comorbidities.

Disease and Treatment Characteristics. The disease and treatment characteristics assessed in the present study included the number of years since the diagnosis of MM (continuous), functional ability (categorical; able to perform housework or office work normally, able to perform housework or office work normally but restricted in ability to perform physical activities, or able to walk around at least one half the time awake but restricted in performing work activities), current treatments received (yes or no; radiation, stem cell transplantation), number of weeks receiving current treatment (continuous), number of times the treatment regimen was changed (categorical; 0 changes [first treatment], 1 change [second treatment], or ≥ 2 changes [third or later treatment]), number of days

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