

# Micro-Costing Analysis of the Economic Burden of Metabolic Dysfunction-Associated Steatohepatitis and Its Comorbidities in Saudi Arabia

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## INTRODUCTION

- Metabolic dysfunction-associated steatohepatitis (MASH) represents a growing public health and economic burden globally and in Saudi Arabia.
- This is exacerbated by the limited availability of approved treatments and inadequate public health policies to curb its incidence.

## OBJECTIVE

To estimate the direct healthcare costs associated with MASH and its common comorbidities in the Saudi Arabia from a payer perspective using a micro-costing approach

## METHODS

- Study Design:
  - Targeted literature review followed by cross-sectional survey
- Literature Review:
  - Targeted review conducted to identify healthcare resource utilization (HCRU) and cost inputs to inform the micro-costing approach
- Survey Method:
  - In-depth virtual interviews (60–75 minutes) with clinical experts
  - Explored patient volume, diagnosis, treatment patterns, and associated costs
- Survey Focus Areas:
  - Epidemiology of metabolic dysfunction-associated steatohepatitis (MASH)
  - HCRU and costs associated with:
    - Cardiovascular complications
    - Obesity
    - Diabetes
    - Postmenopausal breast cancer
    - Colon cancer
    - Postmenopausal endometrial cancer
- Survey Period:
  - October to December 2024
- Participants:
  - 16 clinical experts across Saudi Arabia with 10–15 years of experience
  - Specialties:
    - Endocrinology (n = 2)
    - Diabetology (n = 2)
    - Oncology (n = 4)
    - Hepatology (n = 4)
    - Cardiology (n = 4)

## RESULTS

- The average annual direct cost per patient increased with disease severity, ranging from USD 4,708.26 at fibrosis stage F0 to USD 104,627.97 for hepatocellular carcinoma.
- Liver transplant costs were USD 75,288.69 in the first year and USD 6,301.26 annually thereafter.
- Among comorbidities, distant colon cancer 31,786.29, obesity (USD 19,066.05), and myocardial infarction (USD 15,930) were among the highest cost drivers.
- Additional economic burden of comorbidities were frequently observed in patients with MASH, including diabetes, stroke, and malignancies.
- Table 1. and 2 provides the overall cost per fibrosis stage and MASH complications based on the micro-costing approach and survey data provided by the KOLs.

Table 1. Overall cost by fibrosis stage

Fibrosis stage	Annual cost (\$)
Fibrosis stage 0	4,650
Fibrosis stage 1	4,835
Fibrosis stage 2	5,952
Fibrosis stage 3	8,479
Compensated cirrhosis	9,835
Decompensated cirrhosis	12,355
Hepatocellular carcinoma	103,336
Liver transplant (year 1)	74,359
Liver transplant (year 2+)	6,223

Table 2. Cost of Complications

Complication	Cost (\$)
Cardiovascular disease	Myocardial infarction (MI) = 15,733, Post MI = 3,597, Stroke = 11,730, Post-stroke = 1,902, Coronary heart disease = 3,834, Transient ischemic attack (year 1) = 3,997, Peripheral arterial disease = 3,333, CV death = 1,369
Obesity	Total cost = 18,831
Diabetes (Type 2 diabetes microvascular complications)	Total cost = 5,726
Colon cancer	Colon cancer (year 1) = 9,428, Localized colon cancer = 9,018, Regional colon cancer = 5,914, Distant colon cancer = 31,394
Postmenopausal breast cancer (year 1)	Diagnosis, outpatient visits, and monitoring tests = 8,951, Chemotherapy = 14,993, Total cost = 23,944
Postmenopausal endometrial cancer	Postmenopausal endometrial cancer (year 1) = 8,428

## CONCLUSIONS

- This study shows that MASH places a heavy economic burden in Saudi Arabia, which increases with disease severity and related health conditions.
- These results stress the need for effective treatments and preventive measures to improve patient outcomes and reduce overall costs.