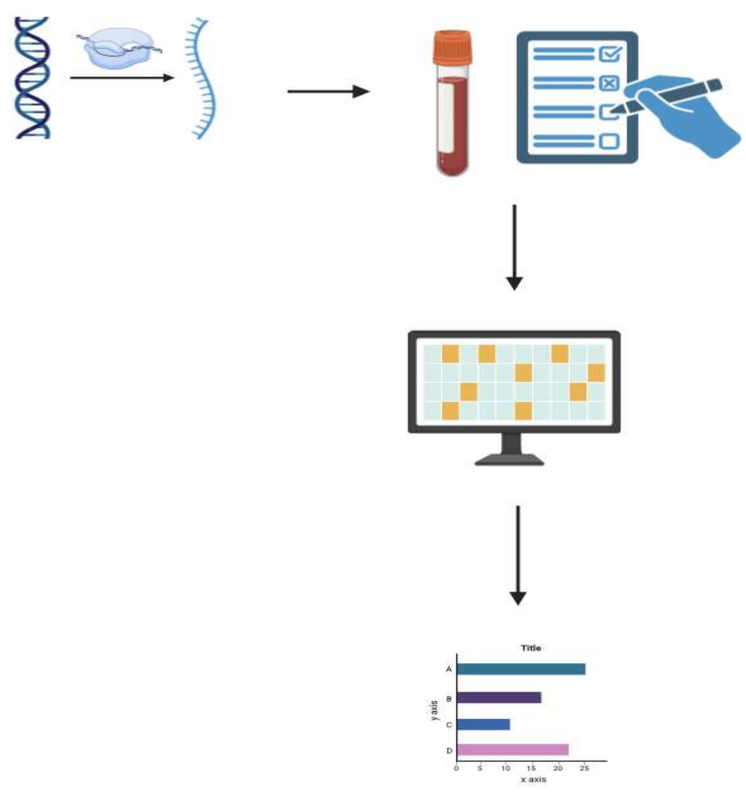
mRNA as a Diagnostic and Prognostic Biomarker in MGUS and Multiple Myeloma: A Systematic Review.

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Introduction

A small fraction of patients with monoclonal gammopathy of undetermined significance (MGUS) progress to multiple myeloma (MM) at an approximate rate of 1% per year, a risk that remains relatively constant over time. Although several biomarkers have been investigated to predict this progression, the results have generally been inconclusive or unpromising. Messenger ribonucleic acid (mRNA), which plays a crucial role in the pathophysiology of plasma cell disorders such as MM, holds theoretical promise as a biomarker. However, its potential for use in diagnosis or prognosis remains underexplored in the current literature.



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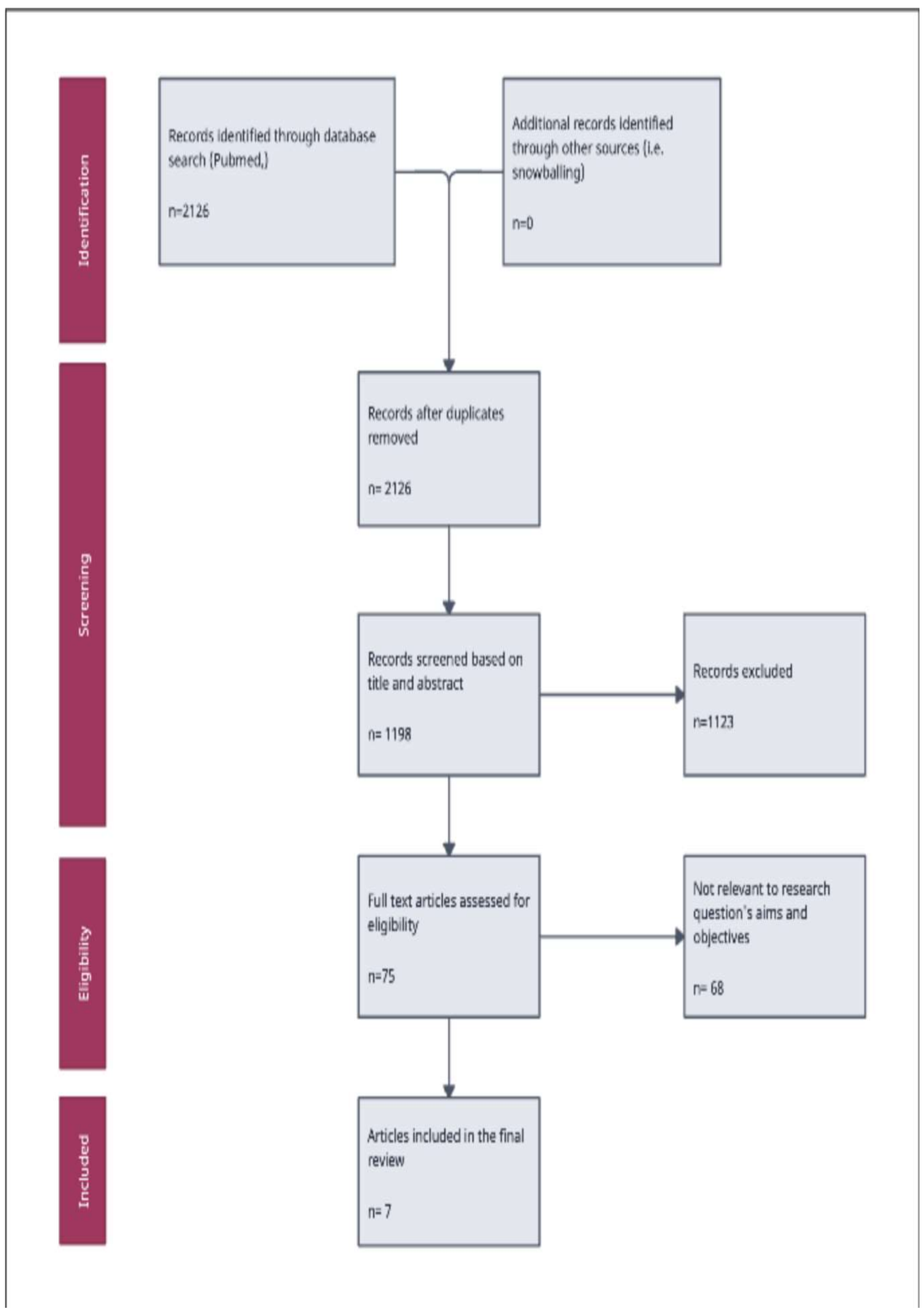
Assess published literature for the use of mRNA as a diagnostic or prognostic biomarker of MGUS and MM.

Objectives

This systematic review was conducted to explore the utilization of mRNA as a biomarker in the diagnosis or prognosis of MGUS and MM by analyzing the published literature.

Methods

A literature search was conducted with the keywords "MGUS", "MM" and "mRNA" in different combinations using the connecting word "AND"on Pubmed. A total of 75 studies were



Results

A total of 75 papers were obtained by conducting this search. Out of these 75 papers, 7 papers with the relevant data were assessed. 10 mRNA biomarkers were noted to be assessed in these studies. Out of these 10 candidate biomarkers, 9 of them were suggested to be good diagnostic biomarkers (GSTP1, TRF1, TRF2, TANK1, MANF, FOXP1 mRNA, MAGE-C1/CT7, MAGE-C2/CT10 and HIF-1α) and 1 was suggested to be a good prognostic marker (CKS1B) by the authors of the paper that described them.

Summary

Despite the recognized importance of mRNA in the pathophysiology of plasma cell disorders such as multiple myeloma (MM) and its precursor, monoclonal gammopathy of undetermined significance (MGUS), its clinical application as a diagnostic or prognostic biomarker remains largely untapped. The preliminary findings are promising, but robust, large-scale studies are needed to validate the sensitivity and specificity of mRNA biomarkers and unlock their full potential in disease detection and risk stratification.

Discussion

Despite the somewhat positive results in our systematic review, our study had flaws that included the utilization of one database, analyzing data from a single principal database and limited information to analyze from the published studies. These flaws are in part due to the limited publications that have explored utilizing mRNA as a biomarker for mRNA and MGUS. Larger studies including prospective studies can help us in analyzing the above-mentioned biomarker candidates better and assess it's reproducibility and accuracy in patients with MGUS and MM.