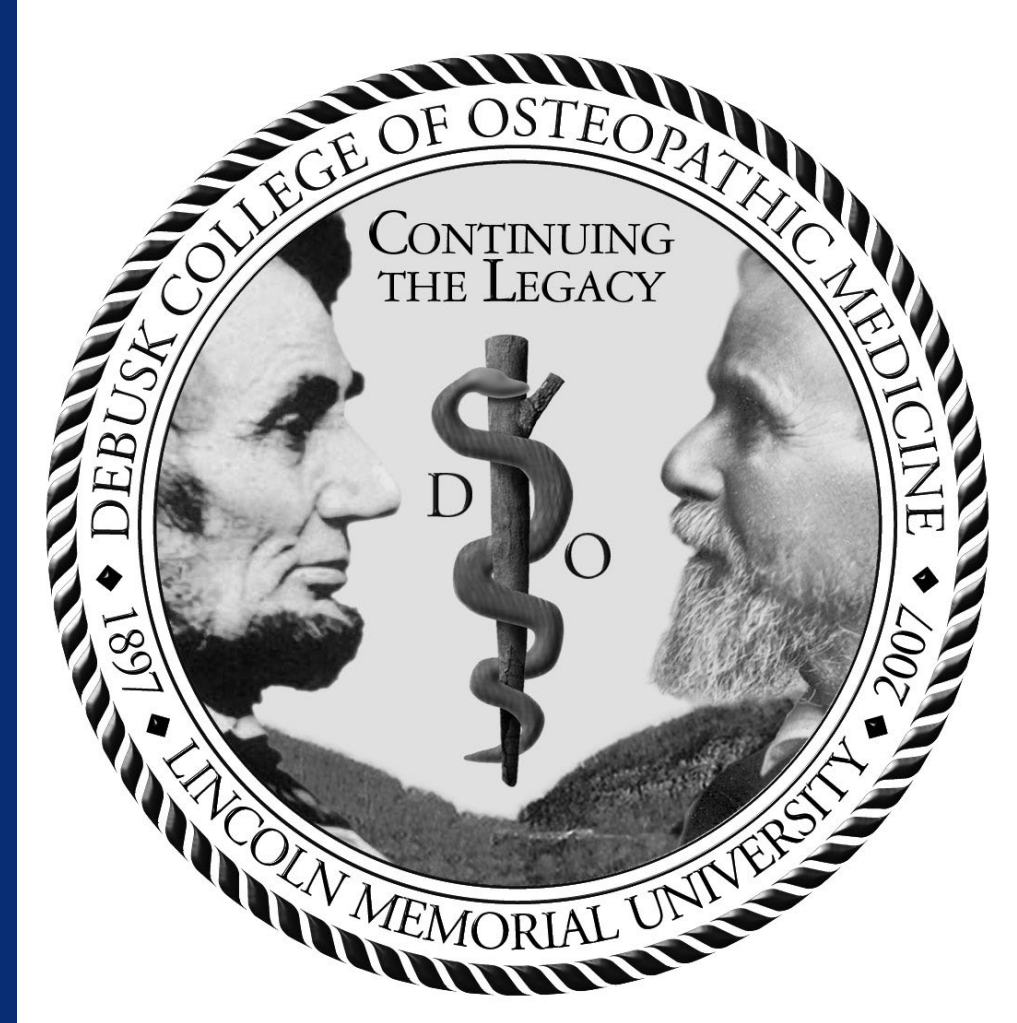


# Ethnobotany of Sickle Cell Disease: a Systematic Review



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## Abstract

Access to comprehensive care for rural patients with sickle cell disease is lacking, even within the United States. Rural patients are more likely to use botanicals and supplements to manage their disease. This systematic review and meta-analysis aims to review the clinical efficacy of botanicals and dietary supplements on managing sickle cell disease and its manifestations other than pain and meta-analyze results as appropriate.

## Introduction

Sickle Cell Disease (SCD) is an inherited disorder of hemoglobin that impacts nearly 100,000 Americans, occurring in approximately 1 of every 365 births in those of African heritage and 1 of every 16,300 births in those of Hispanic heritage<sup>1</sup>. Access to specialized care is often lacking in rural areas<sup>2</sup>. Those who live in rural areas tend to use complementary and alternative medicine more frequently than their urban counterparts<sup>3</sup>. This systematic review and meta-analysis aims to evaluate the use of botanicals and dietary supplements in the management of sickle cell disease manifestations other than pain.

This study is coupled with a convenience sample survey that seeks to identify botanicals used or recommended by health care professionals in the United States. The agents identified in the survey will be compared with those identified through this systematic review.

## Methods

On June 1, 2022, a search of PubMed was made using “sickle cell” AND “herbal”, “sickle cell” AND “nutraceutical”, “sickle cell” AND “phytomedicine”, “sickle cell” AND “plant”, and “sickle cell” AND “botanic”. Criteria for inclusion were controlled clinical trials published in English comparing botanicals or dietary supplements to standard treatment or placebo. Ex vivo studies were excluded as were studies that solely targeted pain management.

## Results

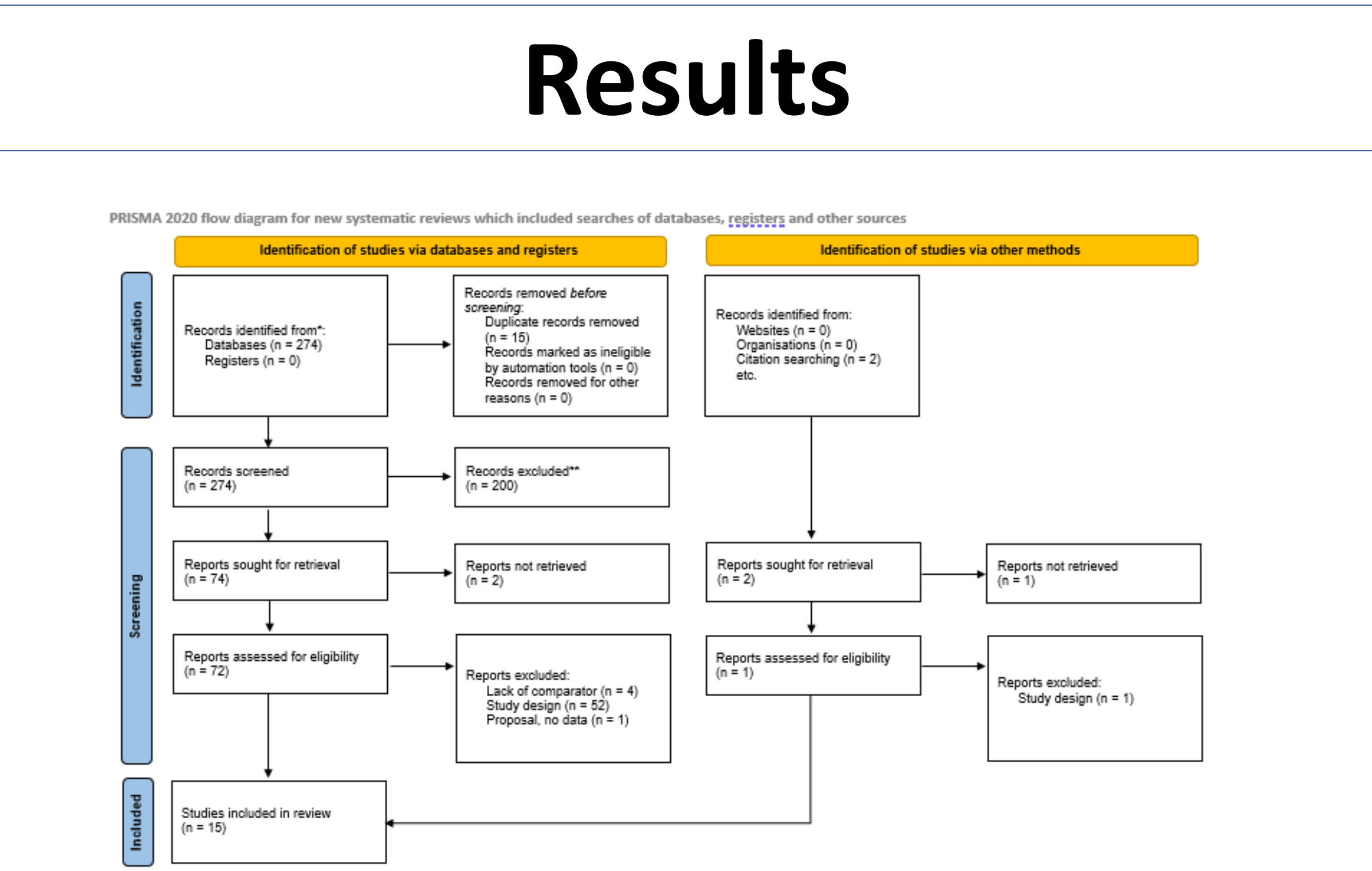


Figure 1. Prisma flow diagram for systematic review<sup>4</sup>

The initial search and screening of abstracts returned 74 articles for further review. Citations of the reviewed articles were mined for applicable studies. After exclusion of articles per pre-defined criteria, 3 publications were not accessible; the corresponding authors have been contacted. Fifteen studies are currently available for inclusion.

Figure 2 depicts the interventions investigated in the included studies. Niprisan™ is a product commercially available in Africa comprised of *Piper guineenses* seeds, *Pterocarpus osun* stem, *Eugenia caryophyllum* fruit and *Sorghum bicolor* leaves<sup>5</sup>.

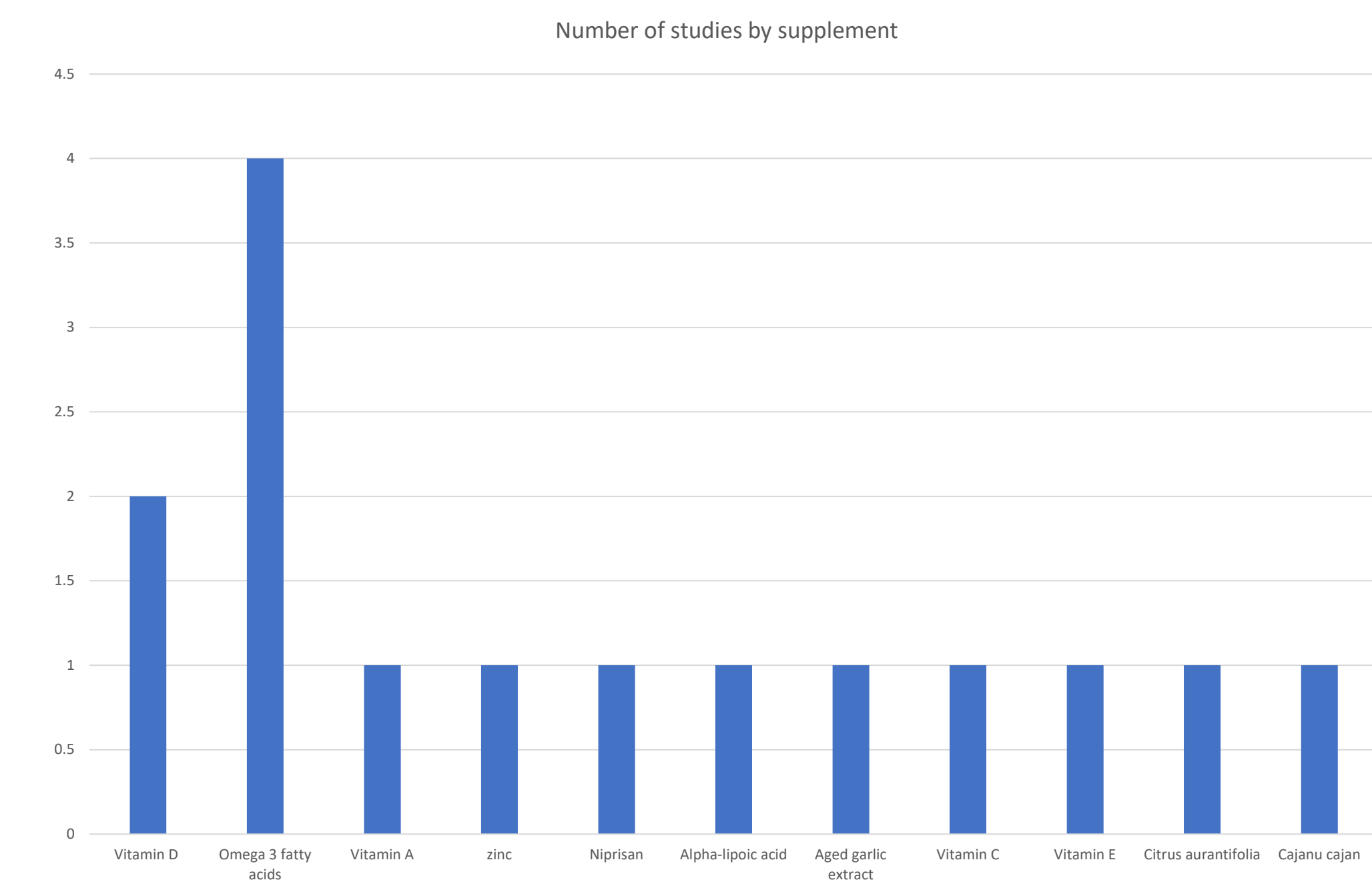


Figure 2. Number of studies by intervention

## Discussion

Many pharmaceuticals today originally derive from botanical sources. Identifying self-treatments to mitigate the manifestations of sickle cell disease can potentially improve the lives of hundreds of thousands of people worldwide with sickle cell disease. Meta-analysis of pooled data may strengthen the level of evidence for traditional treatments.

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