

Covid-19 and Metabolic Syndrome: An Ignored Paradigm

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Introduction

- The rapid and aggressive nature of the SARS-COV-2 pandemic has created an urgent need to identify the comorbidities that impact the course and outcomes of this viral illness.
- Metabolic Syndrome encompasses hypertension, type 2 diabetes and insulin resistance, obesity, and hyperlipidemia.
- These factors contribute to future atherosclerotic cardiovascular disease.
- A scoping review was selected due to the rapid rate at which new literature surrounding COVID-19 has been published .

Objectives

Objective 1

- Analyze current research surrounding patient outcomes, morbidity, and mortality in patients with metabolic syndrome and COVID-19.
- Understand the implication of metabolic syndrome as a clinical entity on patients with COVID-19, including impact on disease progression and outcome.

Objective 2

- Determine if metabolic syndrome is an independent risk factor.
- Analyze each component of metabolic syndrome individually: hypertension, obesity, type 2 diabetes, and hyperlipidemia.

Methodology

Table 2: Inclusion and Exclusion Criteria

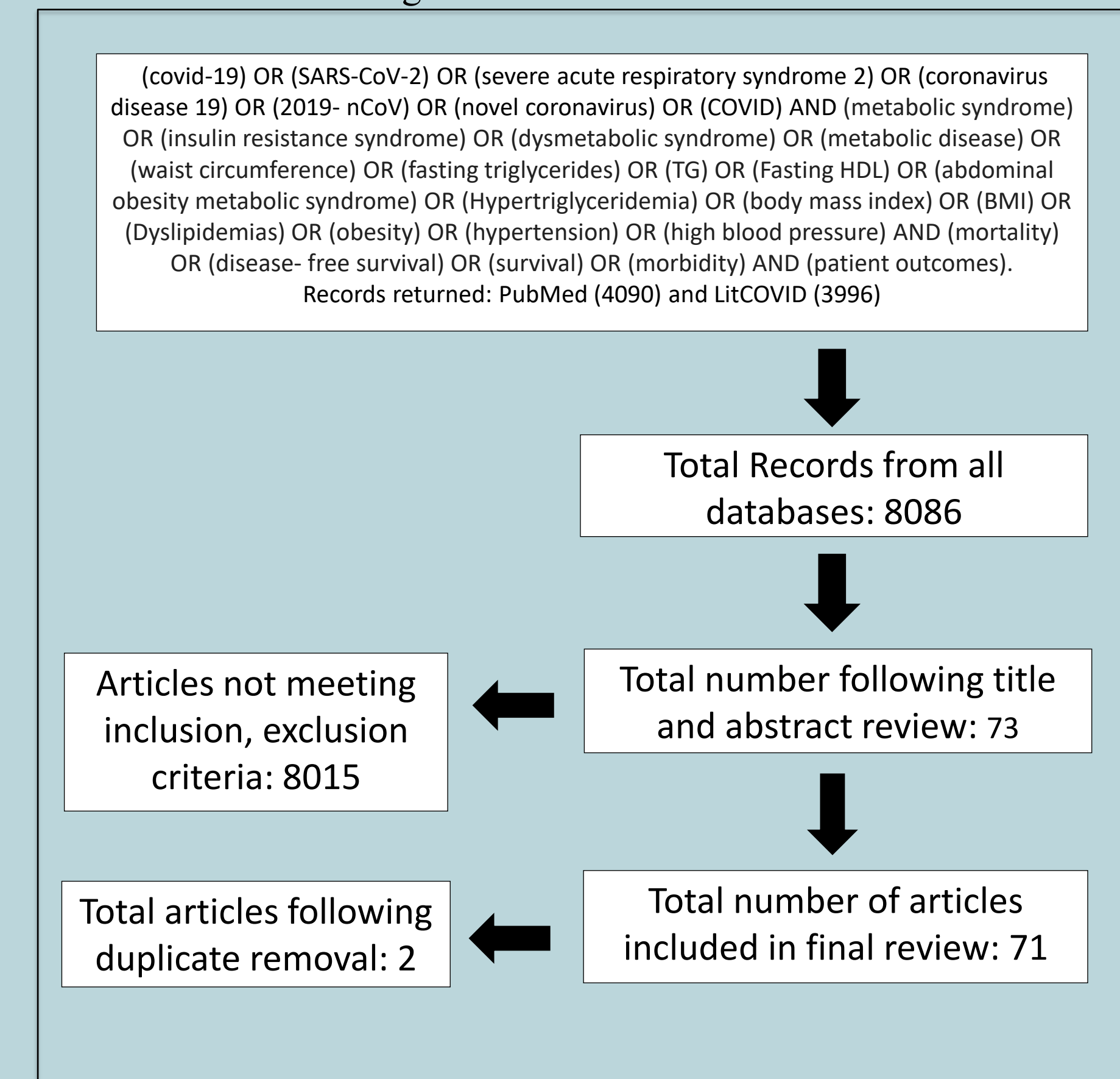
Inclusion Criteria
Scholarly, peer reviewed articles
Articles written in English
Study participants defined as adults (greater than 18 years of age)
Articles pertaining to COVID-19 patient outcomes
Articles involving metabolic syndrome related comorbidities in COVID-19 patients
Articles from 03/15/2020- 10/31/2020
Databases searched: PubMed and LitCOVID
Text availability of articles will include abstracts and full text
Exclusion Criteria
Study participants defined as children, adolescents (less than 18 years of age)
Articles not written in English
Articles about COVID-19 that do not detail patient outcomes
Articles published prior to 03/15/2020 or after 10/31/2020

LitCOVID and PubMed were searched for information about COVID-19, metabolic syndrome, and patient outcomes between October 1st, 2020 through October 31st, 2020. Each database was reviewed independently by two reviewers using the inclusion and exclusion criteria. Any discrepancies were resolved by two reviewers, one from each database review group

Table 1: Search Terms

COVID-19	Metabolic Syndrome	Patient Outcomes
(covid-19) OR (SARS-CoV-2) OR (severe acute respiratory syndrome 2) OR (coronavirus disease 19) OR (2019- nCoV) OR (novel coronavirus) OR (COVID)	metabolic syndrome) OR (insulin resistance syndrome) OR (dysmetabolic syndrome) (metabolic disease) OR (waist circumference) OR (fasting triglycerides) OR (TG) OR (Fasting HDL) OR (abdominal obesity metabolic syndrome) OR (Hypertriglyceridemia) OR (body mass index) OR (BMI) OR (Dyslipidemias) OR (obesity) OR (hypertension) OR (high blood pressure)	AND (mortality) OR (disease- free survival) OR (survival) OR (morbidity) AND (patient outcomes)

Figure 1: PRISMA Flow Chart



Results

- The vast majority of current research focuses on the association of patients with type 2 diabetes and COVID-19.
- There is significantly less available research on the relationship between COVID-19 and patients with hypertension and hyperlipidemia.
- Only 4% of the articles discussed metabolic syndrome as a clinical entity.

Figure 2

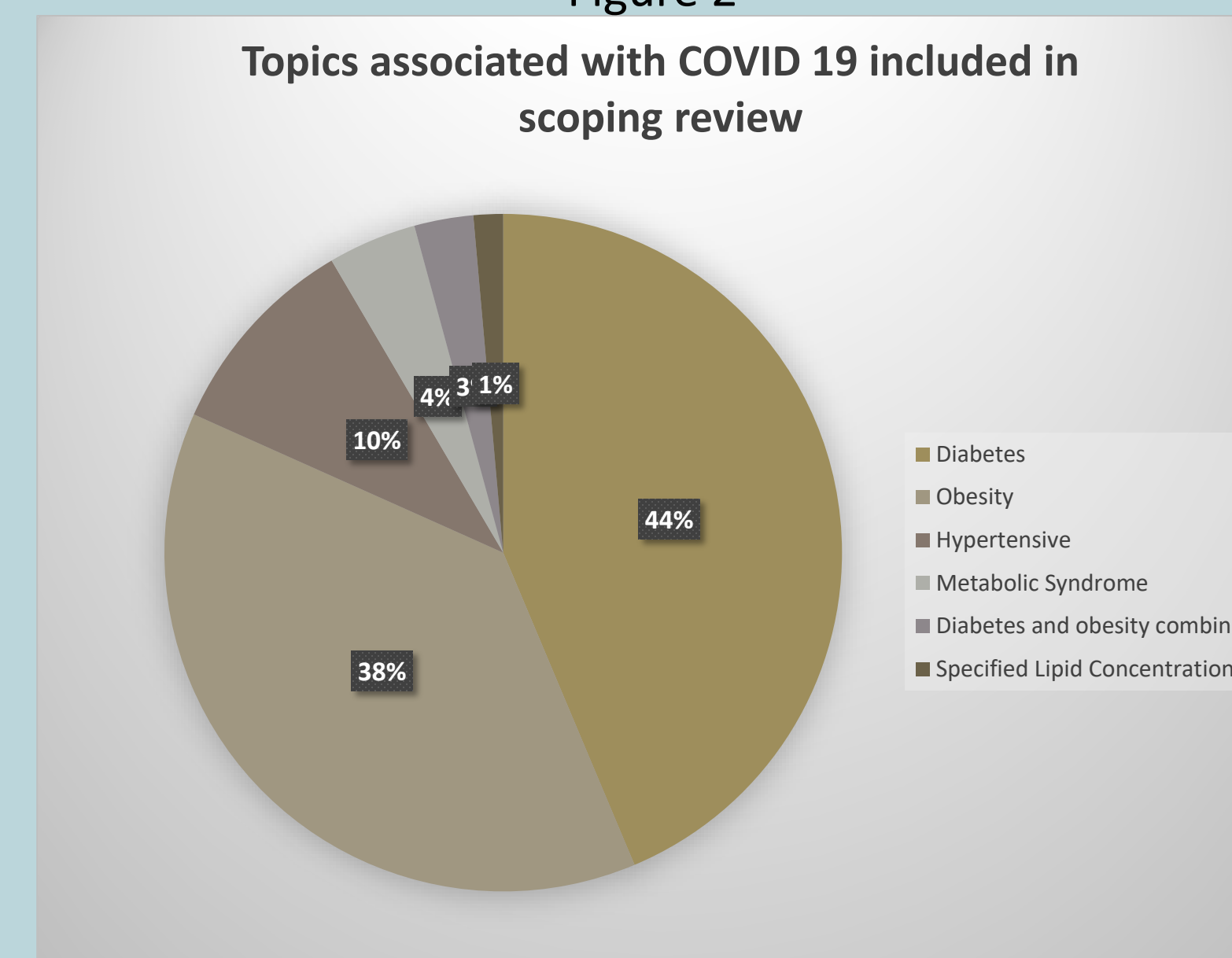
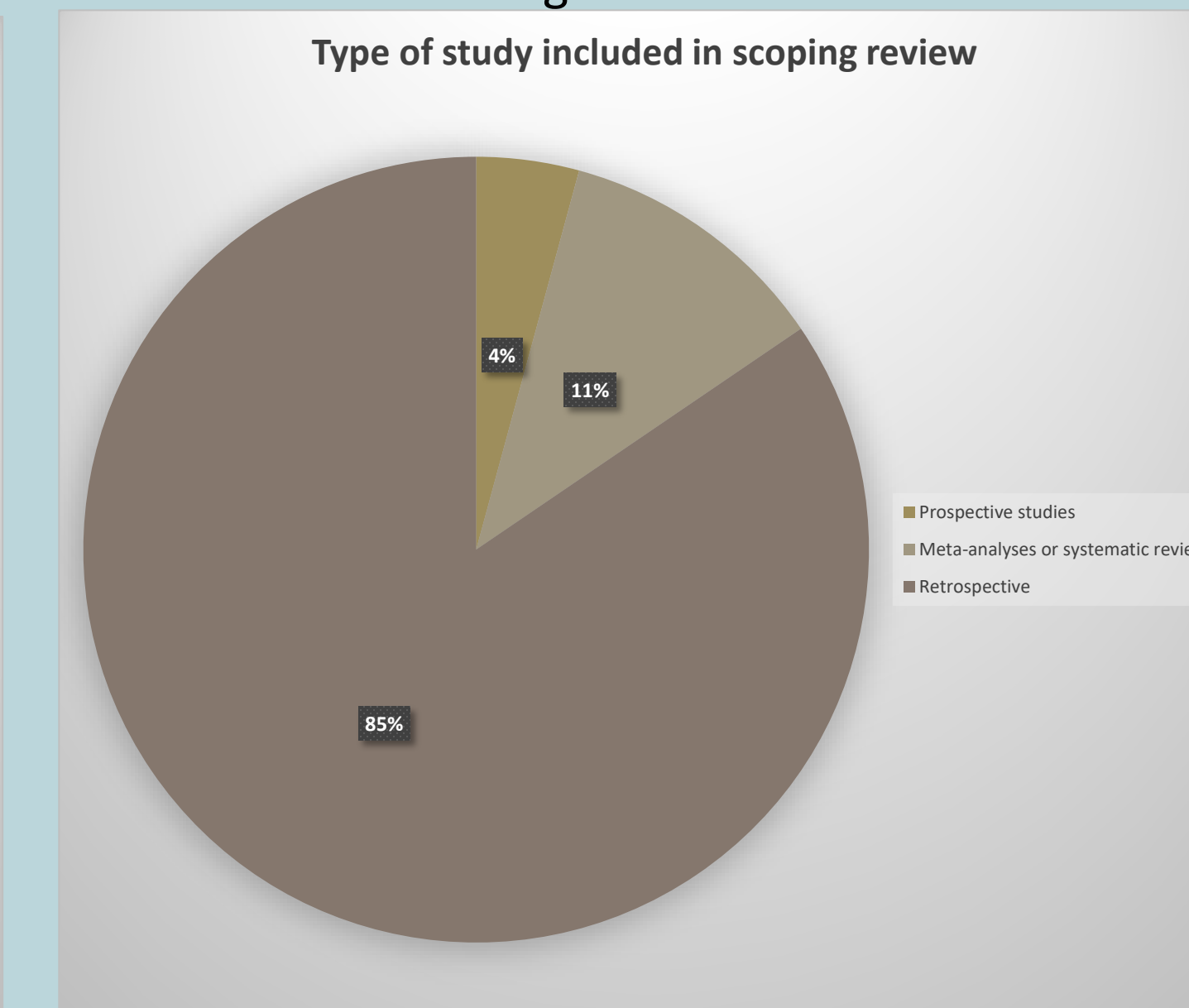


Figure 3



Conclusions

Futures considerations

- Understanding comorbidities associated with COVID 19 enable physicians to better stratify patients based on their risk of outcomes.
- Develop tools specifically for risk stratification of metabolic syndrome patients at risk of COVID-19 infection complications.
- Further research is required to better elucidate the relationship between hyperlipidemia and COVID-19 patient outcomes.
- Further research is required to address metabolic syndrome, including all components: hypertension, type 2 diabetes, hyperlipidemia, and obesity.

Limitations

- The nature of retrospective observational studies only allows association to be deduced.
- Most papers reviewed were small retrospective studies due to the rapidly evolving COVID-19 pandemic.
- COVID-19 research is being published at a high rate causing data and trends to evolve.
- Studies had small sample sizes due to the COVID-19 pandemic.

Acknowledgments

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