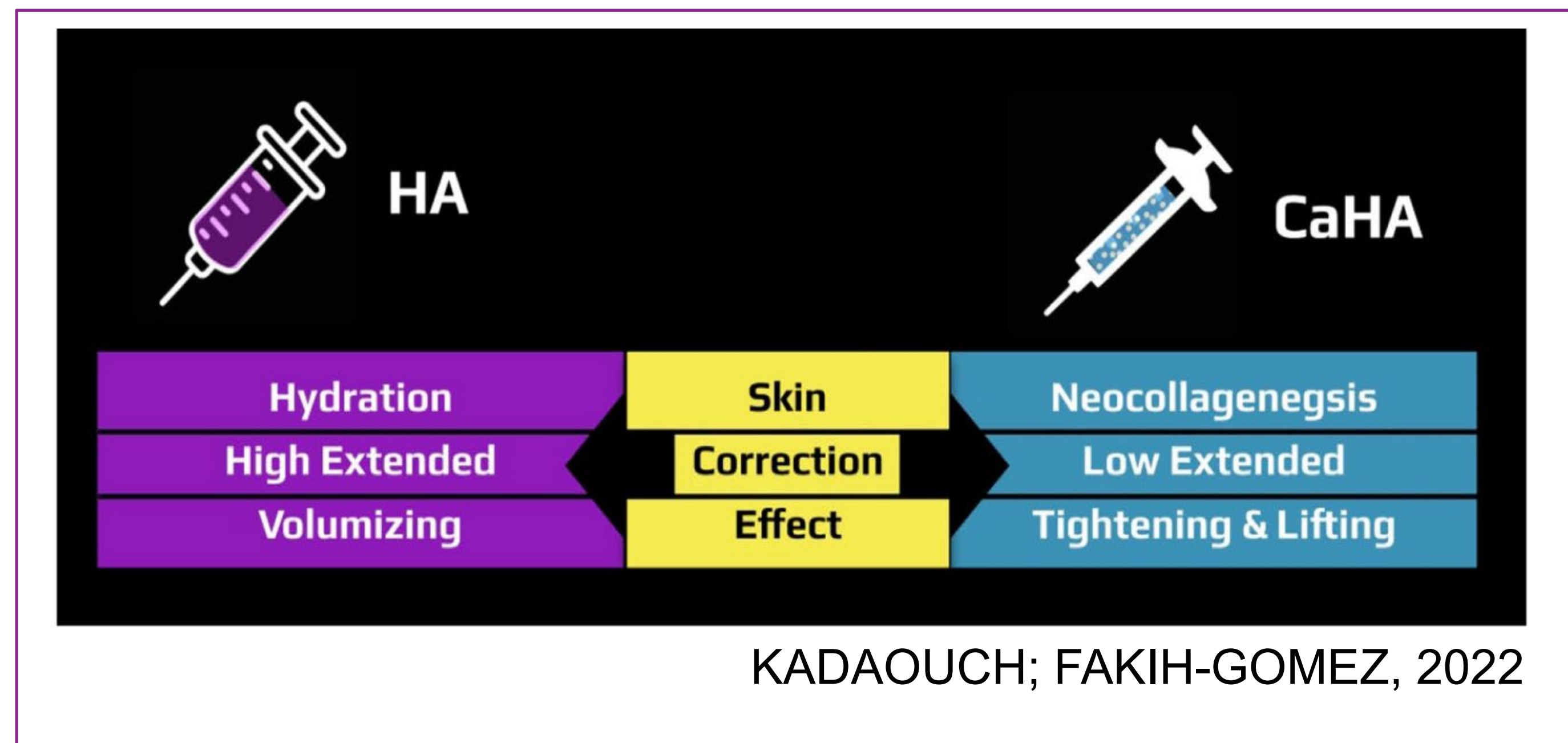


## INTRODUCTION

The growing demand for aesthetic procedures has driven the emergence of a wide variety of fillers and biostimulators, increasing the possibility of choices. However, there is no material that fits within all the desired characteristics.

Hyaluronic acid (HA) injectable fillers are the gold standard for volumizing procedures in facial rejuvenation. In contrast, the most relevant effect of the calcium hydroxyapatite (CaHA) filler is mainly mediated by neocollagenesis, inducing indirect volumization, tissue lifting and skin firming.



## OBJECTIVE

This systematic review aimed to analyze the benefits and adverse effects of using fillers based on hyaluronic acid and calcium hydroxyapatite combined or mixed in a single treatment. As well as to determine the proportion of materials, application protocols, and to prove the efficacy, safety and longevity of this combination.

## METHODS & MATERIAL

The databases used were Embase, Pubmed and Web of Science, in addition to the Virtual Health Library (BVS) and Google Scholar. There was no restriction of period or language, aiming to retrieve the largest possible number of articles. It was used as descriptors " hyaluronic acid ", " calcium hydroxylapatite ", dermal filler " and "face".

### Inclusion criteria of the studies

- treatments to improve skin laxity and facial contouring, face lifting, facial volumization, smoothing of rhytids, patient satisfaction and adverse effects;
- techniques of mixing or combining HA and CaHA fillers in the same session;
- publications in any language;
- experimental and retrospective studies.

## RESULTS

The five studies included in the review were experimentals and retrospectives, with 66% featuring the premixed products, with patient numbers between 15 and 134, treating mostly women. Almost all studies used the commercial products Belotero and Radiesse and the follow-up time varied between 120 and 360 days.

There was no uniformity between the proportions of the products and neither for the dilution solution.

Figure 1. Flowchart of the selection process of articles

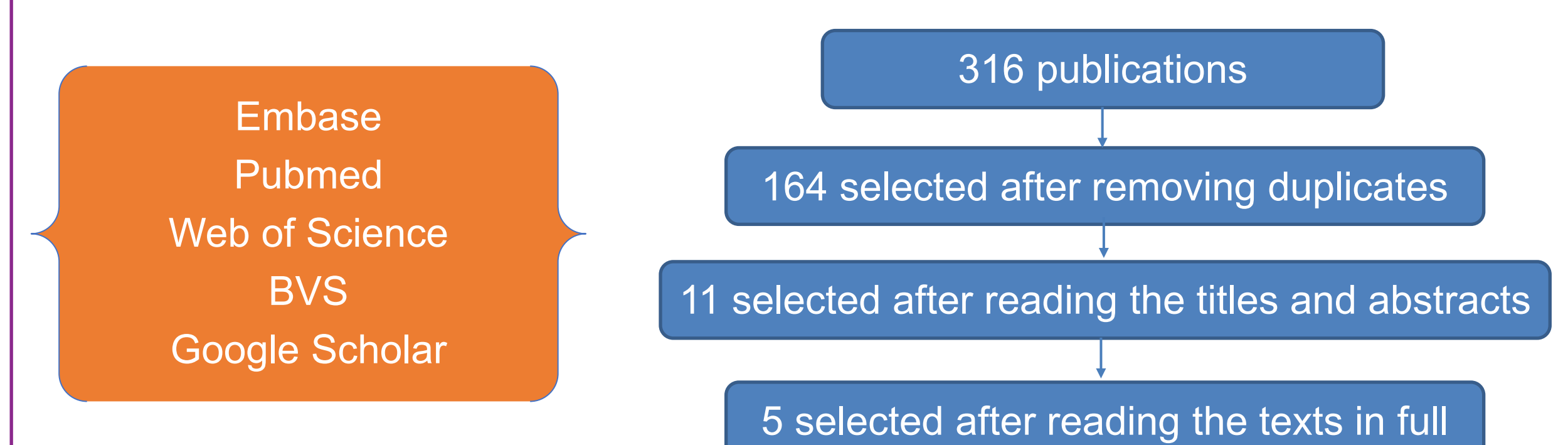


Table 1: Study Characteristics and Demographic Data

Authors	Kind of study	technique	Treated Area	Number of Patients	Age	Female x Male
FÉLIX BRAVO et al , 2022	Clinical trial, double blind with control group	Combined, subcutaneous and suprapariosteal plane	Temporal, zygomatic and mandible	15	36-47	15x0
CHANG et al , 2020	Clinical trial, double blind with control group	Premixed products; subcutaneous plane	Nasolabial fold and mandible	25	36- 68	22x3
GODIN et al , 2006	Comparative clinical trial	Combined, subcutaneous plane	Nasolabial fold, lip edges and perioral lines	72 (only 6 patients received both fillers in the same session)	31-78	68x4
FAKIH-GOMEZ; KADOUCH, 2022	Retrospective cohort (clinical records)	Premixed products, subcutaneous plane	multiple areas	41	21-63	41x0
KADOUCH; FAKIH-GOMEZ, 2022	Retrospective cohorts (clinical records)	Premixed products, subcutaneous plane	Multiple areas (face and neck)	134	18-78	127x7

Ratios of CaHA:AH different were used in the studies. These also varied the form of CaHA dilution (0.9% saline solution and the anesthetic 2% lidocaine hydrochloride or just the anesthetic, in different volumes). The injected volumes of drugs were also diverse and depended on the amount of area being treated and its objective (face lifting and contouring, skin laxity, smoothing of rhytids). The commercial brands Radiesse (Merz), Belotero (Merz) and Restylane (Galderma) were used, however different densities of HA used were observed (Belotero Intense, Volume and Balance). The assessment intervals lasted for up to 12 months. Improvements in skin laxity, restoration of lost contour and facial volume, smoothing of wrinkles and facial folds, patient satisfaction and adverse effects were evaluated.

## CONCLUSION

Mixed or combined hyaluronic acid and calcium hydroxyapatite fillers proved to be safe, effective and led to a high degree of patient satisfaction due to longer-lasting maintenance of filler results, however there is no consensus in the literature that supports an ideal filler protocol treatment, so randomized clinical trials are needed to determine the proportion of materials, application protocols, as well as to prove the efficacy, safety and longevity of this combination.

## REFERENCES

