Explorative scoping review and bibliometric analysis of big data applications for medication adherence.

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The use of _Big Data_ techniques to understand _medication adherence_ is still **under-researched**.
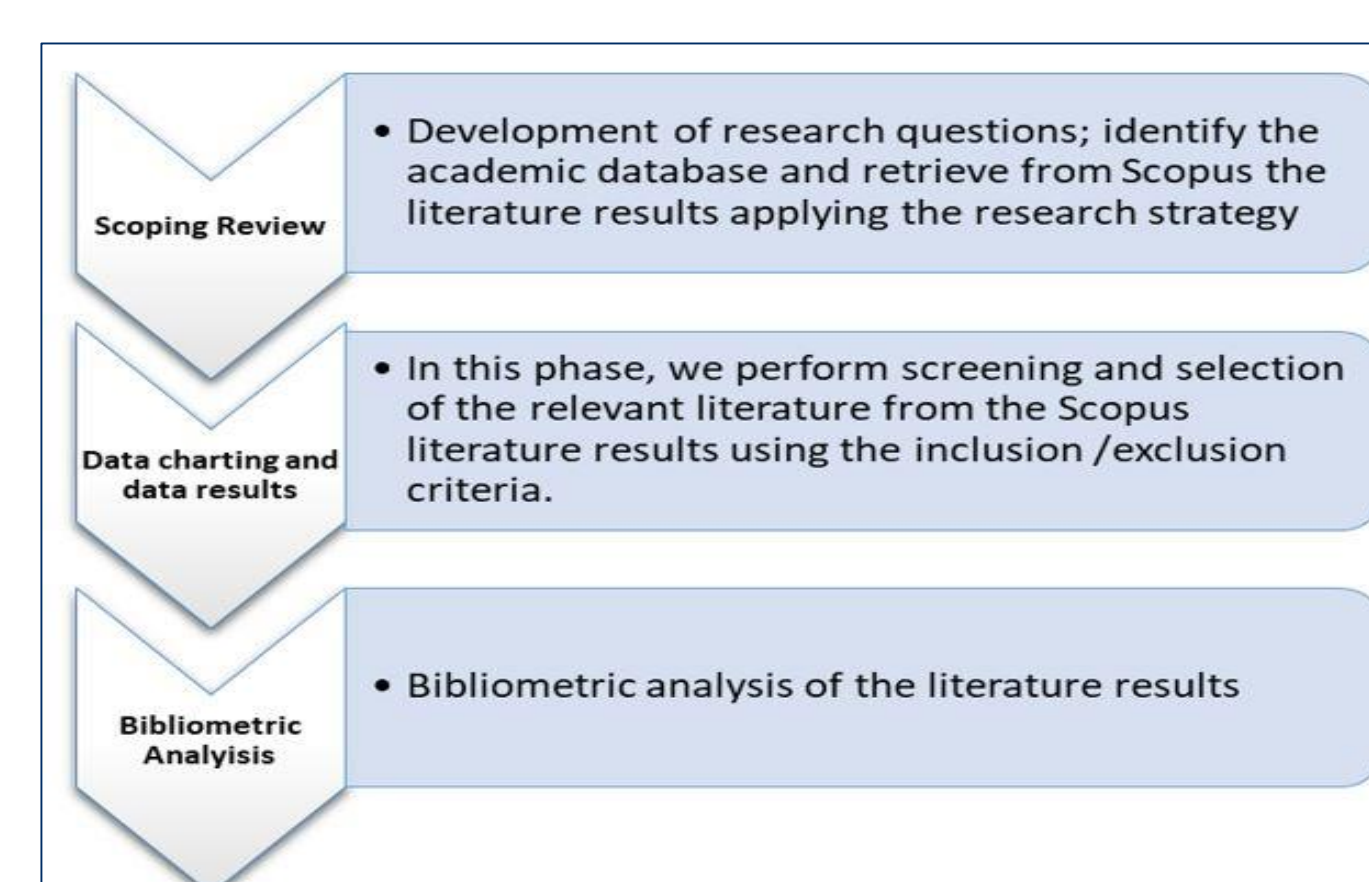
The literature results show how the influence of _illness perception_, _beliefs_ and _psychosocial factors_ associated with medication adherence are a major area that can offer further insights supported by powerful Big Data tools.
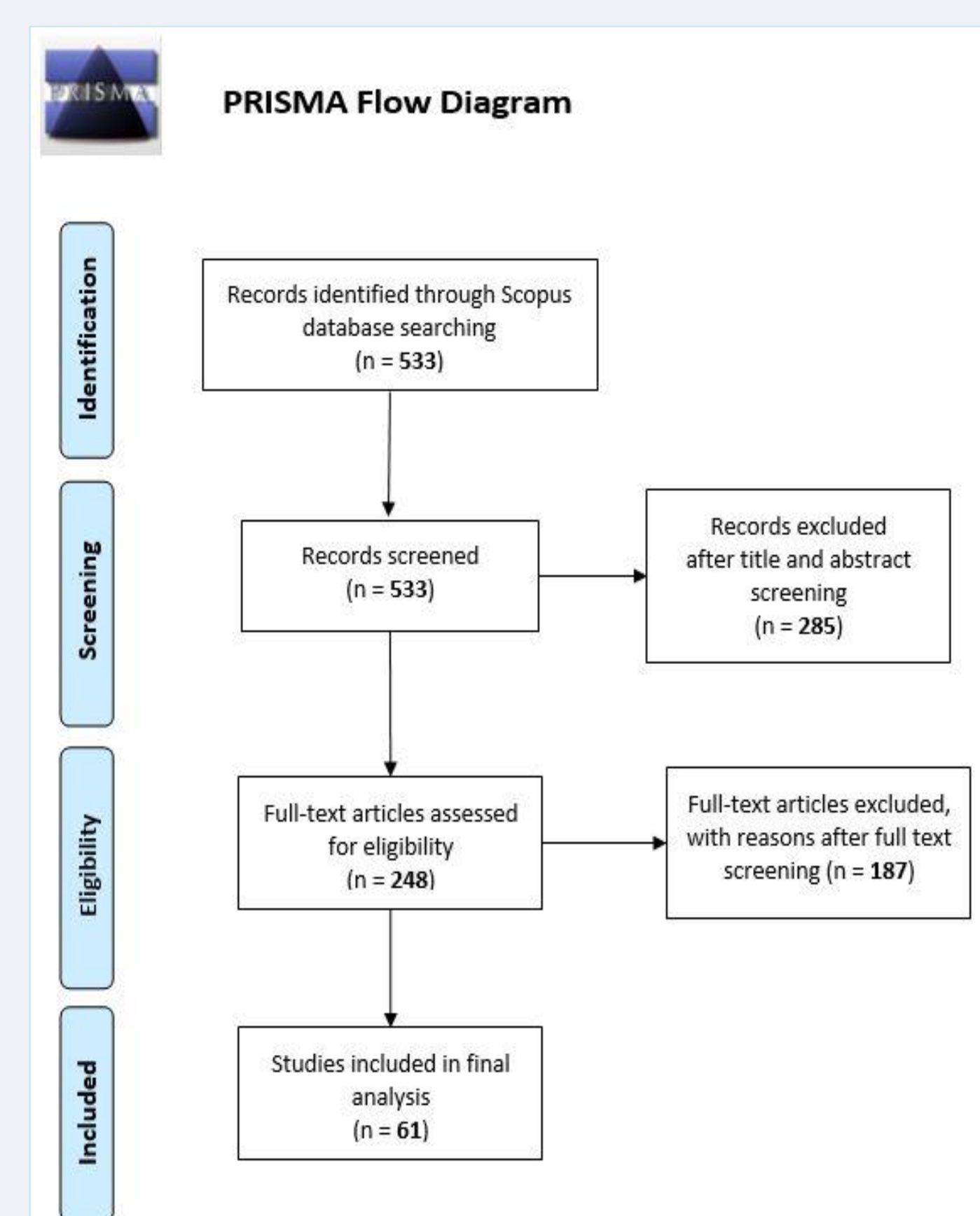
The Problem

Medication adherence has been studied and investigated in different settings, with different approaches and applying different methodologies. Nevertheless, our knowledge and efficacy in measuring and evaluating all the variables and components that affect the management of medication adherence regimes as a complex phenomenon are quite limited. The aim was to assess whether big data approaches have a role in improving knowledge about patterns of medication adherence.
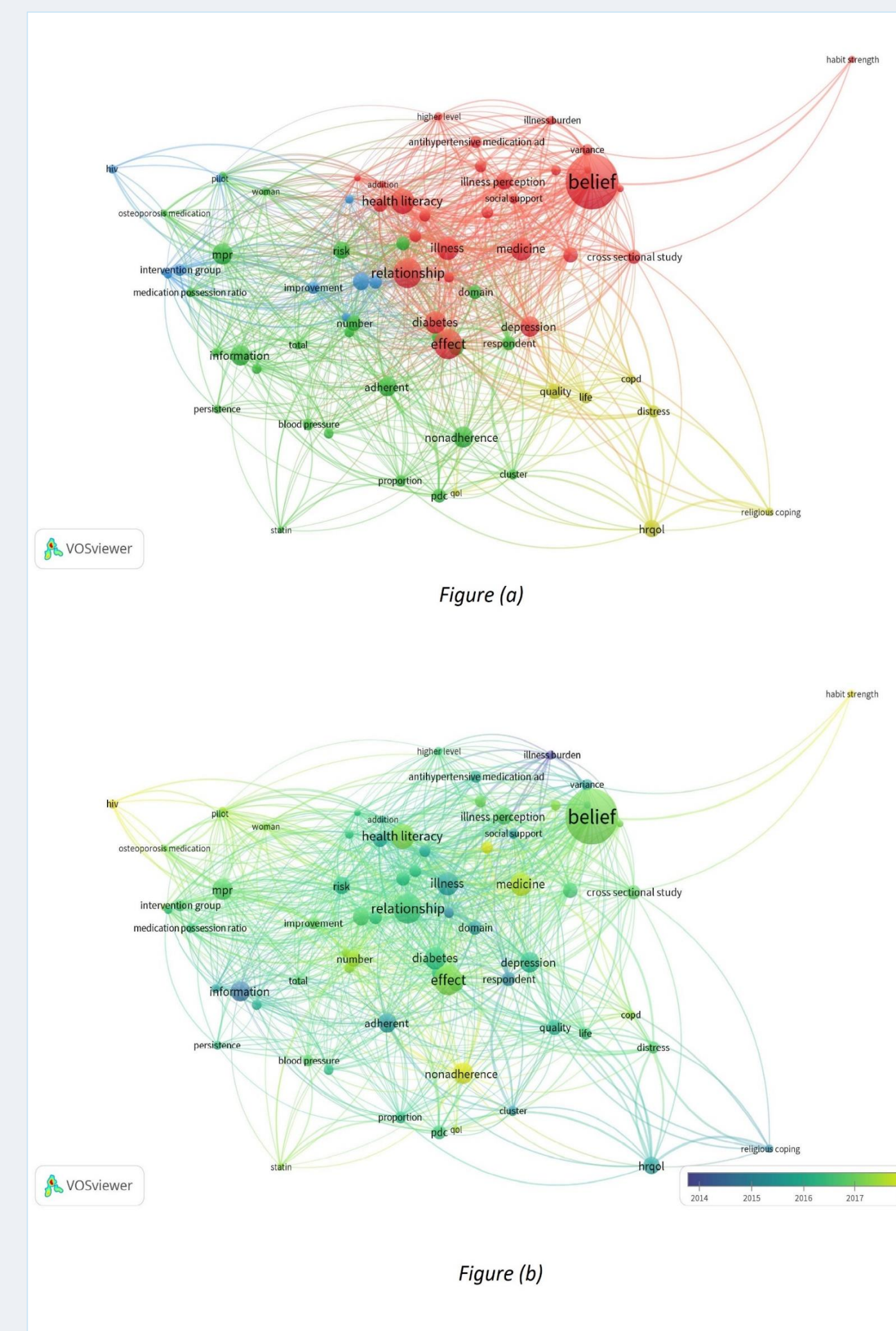
Method

Using an adapted version of Arksey and O'Malley's framework for scoping reviews, the Scopus database was interrogated to identify, chart and summarize studies on medication adherence. Bibliometric analysis was then undertaken to map the evolution of this literature over time, and to chart the concepts represented in this knowledge domain.

- **Scoping Review**: Development of research questions; identify the academic database and retrieve from Scopus the literature results applying the research strategy
- **Data charting and data results**: In this phase, we perform screening and selection of the relevant literature from the Scopus literature results using the inclusion /exclusion criteria.
- **Bibliometric Analysis**: Bibliometric analysis of the literature results

Key Results

533 articles were retrieved from the Scopus academic database, of which 61 met the inclusion criteria. 13 studies (21%) were Randomized Controlled Trials, 12 were retrospective studies and 5 were prospective cohort analyses. The most adopted statistical methods were regression (multivariate and univariate), used in 51% of the studies. The Morisky scale (36%) was the most widely adopted measurement tool and cardiovascular disease/hypertension was the most investigated condition (38%). No studies using advanced data mining techniques to study adherence in chronic conditions were found. Bibliometric analysis of the medication adherence literature showed an average of 6.7 citations per article. The most prolific countries were the USA with 225 citations and China with 40 citations. Analysis of key-words article titles and abstracts showed patients' beliefs and preferences as a key theme and a worthwhile area of investigation.

Additional Information

PRISMA Flow Diagram

Identification — Records identified through Scopus database searching (n = 533)

Screening — Records screened (n = 533) → Records excluded after title and abstract screening (n = 285)

Eligibility — Full-text articles assessed for eligibility (n = 248) → Full-text articles excluded, with reasons after full text screening (n = 187)

Included — Studies included in final analysis (n = 61)

Co-occurrence words analysis of the titles and abstracts among the medication adherence studies selected. Keywords in blue appeared earlier (2014) than those in yellow which appeared later (2018).

Figure (a)

Figure (b)

- Alonso SG, de la Torre Díez I, Rodrigues JJPC, Hamrioui S, López-Coronado M. A Systematic Review of Techniques and Sources of Big Data in the Healthcare Sector. J Med Syst. 2017-41(11):183. Available from: http://link.springer.com/10.1007/s10916-017-0832-2
- Arksey H, O'Malley L. Scoping studies: towards a methodological framework. Int J Soc Res Methodol. 2005; 8(1):19–32. Available from: http://www.tandfonline.com/doi/abs/10.1080/1364557032000119616
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