

Introduction

The incidence and prevalence of diabetes mellitus (DM) have increased considerably all over the world, which is related, to a great extent, with the raising of obesity. At global level it is estimated that the total people with diabetes will raise from 415 million (8,8%) in 2015 to 642 million (10,4%) in 2040, and it is expected that the greatest changes happen in urban population from middle- and low-income countries. The raising of diabetes impacts in an important way the need of Renal replacement therapies (RRT) such as dialysis and kidney transplant because of Chronic Kidney Disease (CKD) in Type 2 Diabetes (T2D).

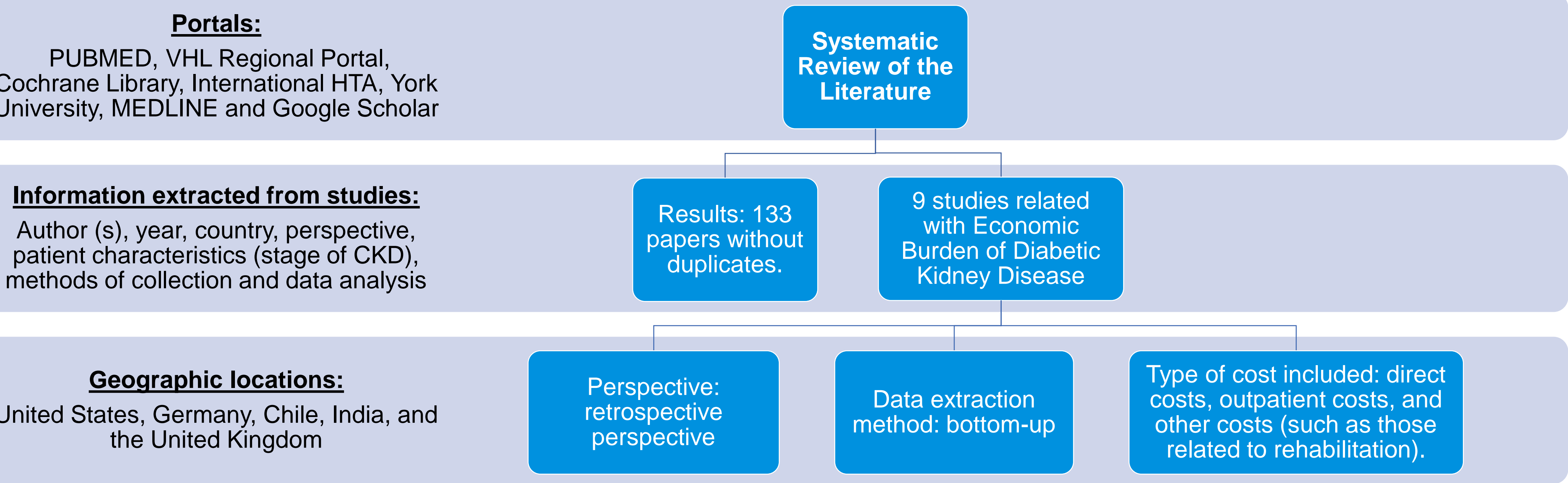
Objective

Conduct a systematic literature review (SLR) to identify the methodologies used in studies of economic burden of Chronic Kidney Disease (CKD) in Type 2 Diabetes (T2D).

Results

Literature review process

Next figure describes the portals, information extracted from the studies, and geographic locations, perspective, data collection methods from the selected investigations after the literature review about CKD



Key points

- The nine selected studies were carried out in different countries: four were conducted in the United States, two in India, one in Chile, one in Germany and the last one assumed a comparative perspective of the United States and the United Kingdom.
- Five of the studies are retrospective, one study addresses is prospective, one made use of both perspectives and two studies did not specify the perspective used. All the studies used “bottom-up” methodology for data collection process.
- Two articles addressed cost discrimination according to stages of disease development, using albuminuria concentration and the estimated index of glomerular filtration rate (eGFR) as main references.
- One study address the economic cost of CKD from an integrated perspective, understanding the costs associated with chronic kidney disease among diabetic patients, whereas four studies do not provide stratified information by stages nor having some degree of distinction within direct costs, two studies disaggregate the costs between direct or indirect according to the degree of severity and two studies present cost information by disease stage.

Methods

- Direct (medical or non-medical) and indirect costs are linked to loss of productivity and time spent by the patient (and caregivers) suffering from the disease. Data was analyzed thru different approaches such as “top-down”, when costs are gathered in an aggregated way and “bottom-up”, which estimates the burden of disease from supplies consumption made by a patients group with CKD that is then extrapolated to the total population according to the prevalence of disease.
- Prospective and retrospective inclusion criteria were used to obtain an unbiased evidence base. The review was made on independent literature following the Cochrane methodological guidelines using PUBMED, VHL Regional Portal, Cochrane Library, International HTA, York University, MEDLINE and Google Scholar portals. For the selection of studies, those that had statistical analysis of cost estimation were considered but not those where there was a medical intervention.

- There is a substantial economic burden of kidney disease or kidney damage due to diabetes and this burden becomes stronger as the disease worsens. The average nominal costs associated with albuminuria concentration stages are not diametrically different, but the costs related to the progression from macroalbuminuria to the end stage of kidney disease are significant. Furthermore, when analyzing the distribution of costs between direct and indirect, the former are higher than the latter, particularly in the advanced stages of CKD.
- Procedures of dialysis and kidney replacement are performed in advanced stages of CKD, which explains the cost increase at this stage, found throughout the literature review.
- This reinforces the idea that controlling the disease in early stages lowers the economic costs associated with diabetic nephropathy, and as a result of this literature review process, were found some alternatives that would reduce the likelihood of patients developing a higher degree of severity.

Conclusions:

Overall, in the studies it was found that there is a substantial economic burden of CKD in T2D, and burden is larger as the disease worsens. In this way, all the studies reinforce the idea that controlling the disease in early stages reduces economic costs associated with diabetic nephropathy. It is important to recognize differences in costs due to diversity of healthcare systems, sociodemographic characteristics, and geographic issues. No information was found that thoroughly analyzed the effect of the cost of productivity, a factor of importance among the indirect costs associated with this disease.

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