

## Background

- Key roles for clinical pharmacist caring for CKD patients includes:
  - Medication management cost
  - Managing complications (e.g. anaemia, CKD-MBD)
  - Pharmacist led clinics (Medication review, Transplant clinic)
  - Independent prescribing
- Since the publication of a review by Salgado et al (1), the prescribing practice is continually developing and embedding into clinical pharmacy practice. Moreover, the model of care and advancement in practice is changing and evolving. Hence, there is a need to update the review in collaboration with the original authors.

## Aim

- The overall aim of the SR was to critically appraise, synthesize and present the available evidence for the structures, processes and related outcomes of clinical pharmacy practice in caring for patients with CKD.

## Review Questions

- What clinical pharmacy practice related resources (structures, e.g. the multidisciplinary team, clinical pharmacy skill mix and time allocation) are in place and how are these matched to healthcare needs and demands to enable provide care to CKD patients?
- What activities are performed (processes, e.g. medication review, prescribing) to care for patients with CKD, how and when are they performed?
- What are the outcomes of the structure and the processes on the effectiveness (Economic, Clinical, and Humanistic Outcomes (ECHO) model) and efficiency of care provided?

## Methods

- A SR protocol was registered with the international prospective register of systematic reviews (PROSPERO). (2)
- Databases searched from April 2010 to March 2017:
  - PUBMED, CINAHL, IPA, SCOPUS
- Search strategy:
  - A concept map was developed of relevant MESH related search terms. This was guided by terms from original review (e.g. CKD, RRT & clinical pharmacy, pharmaceutical services).
  - The search was conducted on 07/06/2017.
- Quality assessment:
  - Mixed methods appraisal tool (MMAT) tools (3), suitable for controlled and non-controlled studies, was used for all papers.
- Independent, screening of titles, abstracts, and full texts, as well as quality assessment was performed by SR team members.

## Results

- The search identified 37 relevant articles..
- There were 13 controlled studies and 24 uncontrolled studies involving 10,016 participants.
- The 37 studies included in the review were carried out in the USA (n = 8), Iran (n = 5), India (n = 3), France (n = 3), Spain (n = 3), Jordan (n = 2), Japan (n = 2), Nigeria, Australia, Germany, Netherlands, Indonesia, Singapore, Norway, Canada and the UK, with one study each.
- Majority of the papers were of 'FAIR' quality.
- Pharmacists intervention was the main focus of all the studies identified, but only 40.5% focused on clinical outcomes.
- Pharmacists were able to identify 4,244 drug therapy related problems in 2,650 patients and made 2537 recommendations to different healthcare professionals with an acceptance rate varying from 33.3% to slightly above 95%.
- Few studies reported the clinical significance of the recommendations ranging from moderate to life-saving.

## Results

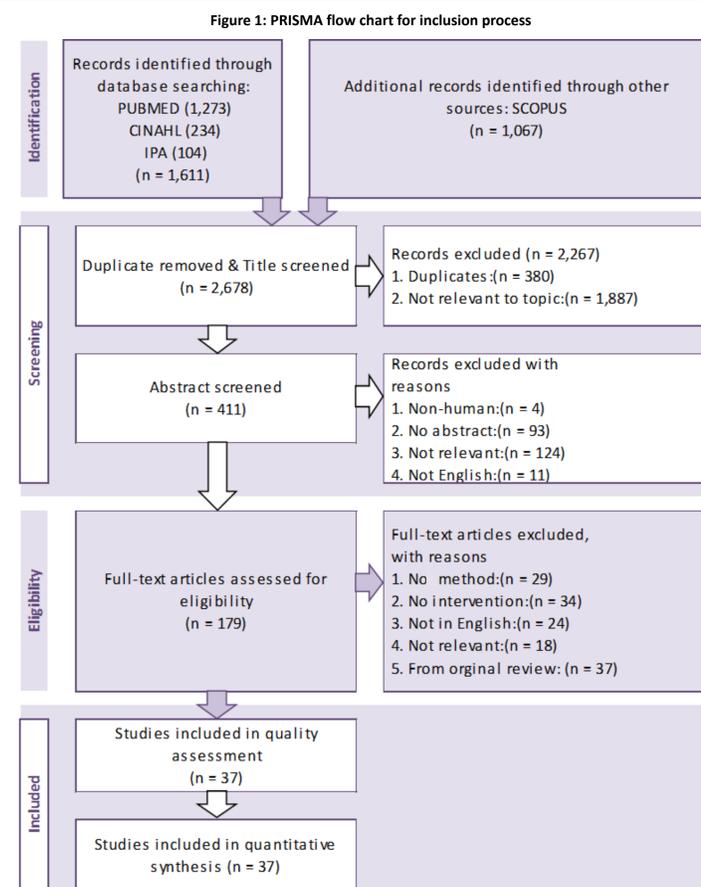


Figure 2: Stacked bar chart representing quality of quantitative Randomised Controlled Trials

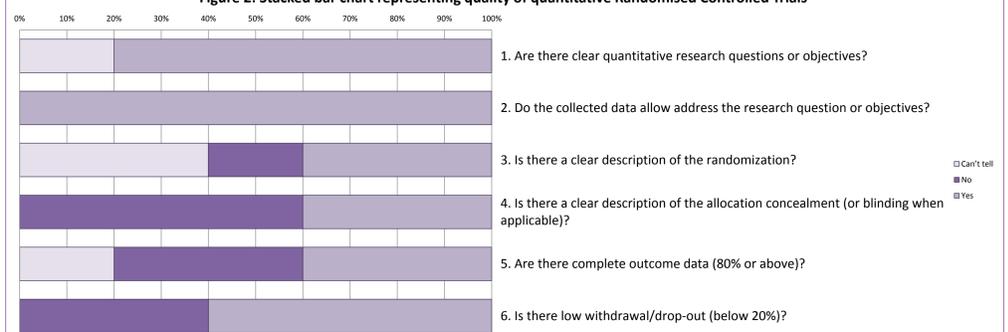


Figure 3: Stacked bar chart representing quality of quantitative non-randomised studies

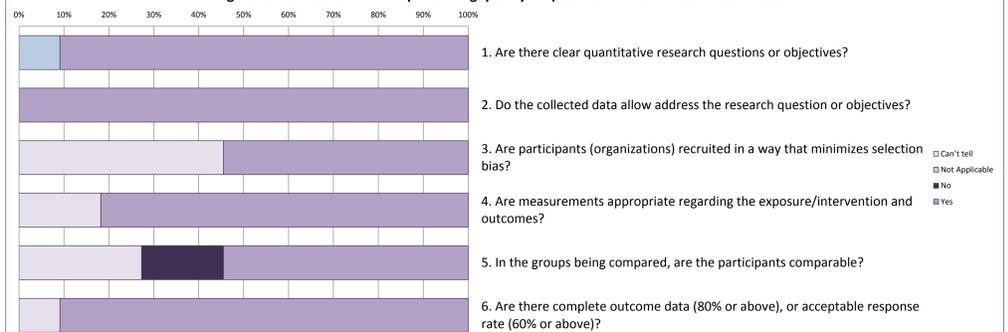
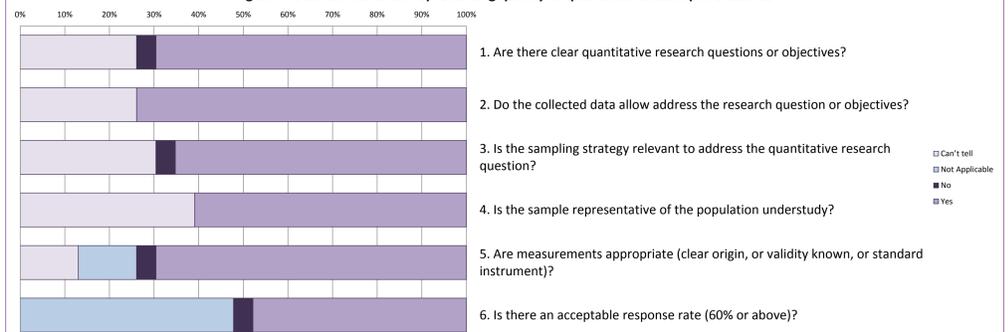


Figure 4: Stacked bar chart representing quality of quantitative descriptive studies



## Conclusion

There is still lack of good quality evidence of pharmacists role in caring for patients with CKD and the outcomes are diverse. Yet it is apparent with the best available evidence that pharmacists caring for patients with CKD may have positive impact on the outcomes of these patients.

## References

- Salgado T, et al. Pharmacists' intervention in the management of patients with chronic kidney disease: a systematic review. NDT. 2012, 27: 276-292
- Al Raiisi F, et al. The structures, processes and related outcomes of clinical pharmacy practice as part of the multidisciplinary care of patients with CKD: a systematic review update. PROSPERO 2017:CRD42017065258 Available from [http://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42017065258](http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42017065258)
- R. Pace, et al. Testing the reliability and efficiency of the pilot Mixed Methods Appraisal Tool (MMAT) for systematic mixed studies review. IJNS., 49 (2012), pp. 47-53