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Thesis abstract

Impact of community pharmacist interventions to manage medication adherence

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Background: As medication non-adherence continues to be a global public health problem, the development, evaluation and implementation of interventions to address this prevalent problem represent a key priority. Community pharmacists' role is evolving from the dispensing of medications to the provision of professional services aiming at improving patient outcomes. Pharmacists have, therefore, the potential to deliver interventions to manage medication adherence. Nonetheless, there is still a lack of evidence on the effect of community pharmacist-led interventions on medication adherence and clinical outcomes.

Objectives: To explore and evaluate the impact of medication adherence interventions undertaken by community pharmacists across different chronic diseases. This research aims to provide evidence on the efficacy and effectiveness of community pharmacist-led interventions in Australia and Spain on medication adherence to interventions and disease-specific outcomes.

Methods: Multiple methods were applied in this research. Chapter 2 presents a systematic review and network meta-analysis, following the PRISMA guidelines, comparing long-term interventions on the impact on medication adherence across different chronic diseases. Chapter 3 describes a retrospective observational study evaluating the impact of a real-life practice intervention in Australia provided by community pharmacists to patients with chronic medications (rosuvastatin, desvenlafaxine, irbesartan). Chapter 4 presents a cRCT to evaluate the impact of a medication adherence management service in a community pharmacy setting in Spain. Chapter 5 describes a sub-analysis of the cRCT including patients with asthma and COPD being prescribed inhaled medications. A multilevel regression model was used to measure the impact of the medication adherence management service on medication adherence and disease-specific clinical outcomes (Chapter 4) and inhaler technique (Chapter 5). Chapter 6 presents an effectiveness-implementation hybrid design evaluating the clinical impact of the medication adherence management service when translated to routine practice during an implementation study. For this analysis, patients were classified in three groups: A) those allocated to the intervention group during the cRCT and continue during implementation, B) those allocated to the control group during the CRCT and continue during implementation, and C) new patients in the implementation study.

Results: Chapter 3 presents the impact of a real-life community pharmacist-led intervention in Australia. De-identified data of 2,530,562 patients and 3,328 Australian

community pharmacies from 2014 to 2017 were contained in the database. A total of 1,805 pharmacies and 20,335 patients who met the inclusion criteria were included in the analysis, with an average age of 67 (SD: 11.76). Three months after the intervention was provided, there was an increase from 50.2% (SD: 30.1) to 66.9% (SD: 29.9) for rosuvastatin, from 50.8% (SD: 30.3) to 68% (SD: 29.3) for irbesartan and from 47.3% (SD: 28.4) to 66.3% (SD: 27.3) for desvenlafaxine, in adherence rates. Rates decreased over 12 months to 62.1% (SD: 32.0) (rosuvastatin), 62.4% (SD: 32.5) (irbesartan) and 58.1% (SD: 31.1) (desvenlafaxine).

The results of the cRCT are highlighted in Chapter 4. Patients (n = 1,186) were recruited from 98 pharmacies and 87.5% (n = 1,038) completed the six-month study. Compared to control patients, patients receiving the intervention had an Odds Ratio (OR) of 5.12 of being adherent at the end of the study. ORs for hypertension control, asthma control and COPD low clinical impact were 1.22 (95% CI: 0.78–1.91), 1.88 (95% CI: 1.05–3.36) and 2.01 (95% CI: 1.07–3.75), respectively, favouring the intervention group. For patients using inhaled medications (i.e. subanalysis of patients suffering from asthma or COPD in the cRCT), the odds of improvement of patients with correct inhaler technique were 4.57 favouring the intervention group. The impact of the medication adherence management service resulted on an improvement on clinical outcomes (e.g. medication adherence and disease-specific outcomes) for all patients during the implementation study (i.e. routine-practice), with greater improvements observed in those patients who have not been exposed to the intervention before (groups B and C).

Conclusion: Community pharmacist-led interventions led to an improvement in medication adherence and disease-specific clinical outcomes. A real-life intervention in Australia resulted in the improvement of adherence after providing the intervention with an eventual decline on adherence rates post-intervention, highlighting the importance of continuous follow-up. To improve the effectiveness of this intervention, factors such as follow-up, fidelity measures and the addition of other components to the intervention should be considered. These factors were considered when developing a medication adherence management service in Spain. This intervention resulted in the improvement of medication adherence and disease-specific outcomes under the cRCT (controlled environment) and the implementation study (real practice). The intervention also improved inhaler technique on patients suffering from asthma and COPD and contained multiple components (e.g. educational, attitudinal, technical), which have been found effective at improving medication adherence. The essential role that community pharmacists have in the management of medication adherence should be considered in the development of future interventions.

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